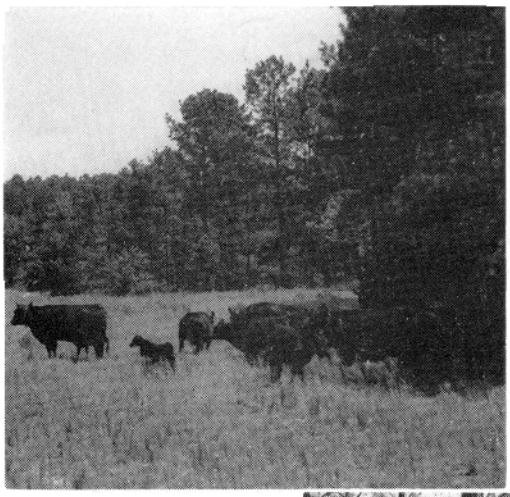
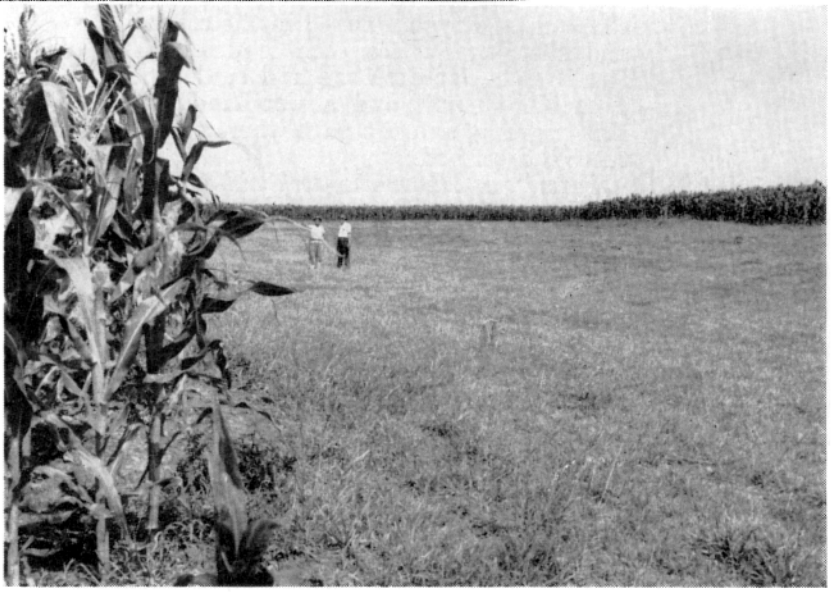


SOIL SURVEY
WALTON COUNTY
GEORGIA



United States Department of Agriculture
Soil Conservation Service
in cooperation with
University of Georgia
College of Agriculture
Agricultural Experiment Stations

Series 1961, No. 12

Issued December 1964

HOW TO USE THE SOIL SURVEY REPORT

THIS SOIL SURVEY will serve various groups of readers. It will help farmers in planning the kind of management that will protect their soils and provide good yields; assist engineers in selecting sites for roads, buildings, ponds, and other structures; aid foresters in managing woodlands; and add to our knowledge of soil science.

Locating soils

Use the index to map sheets, at the back of this report, to locate areas on the detailed soil map. The index is a small map of the county that shows what part of the county is represented on each sheet of the detailed map. On the detailed map, the boundaries of the soils are outlined, and each kind of soil is identified by a symbol. For example, the symbol CdB2 identifies Cecil coarse sandy loam, 2 to 6 percent slopes, eroded. All areas marked with the same symbol are the same kind of soil. All of the kinds of soil shown on the detailed map are described in the section "Descriptions of the Soils."

Finding information

Different sections of this report will interest different groups of readers. The "Guide to Mapping Units" at the back of the report can help the reader to use the map and the report. This guide lists each soil and land type mapped in the county, and the page where each is described. It also lists, for each soil and land type, a capability unit and a woodland suitability group, and the page where each of these is described.

Farmers and those who work with farmers can learn about the soils in the section "Descriptions of the Soils." In the section "How to Use and Manage the Soils," they can learn about management and yields. In that section, soils are placed in capability units according to their management needs and their response to management. For example, Cecil coarse sandy loam, 2 to 6 percent slopes, eroded, is in capability unit IIe–2. Suggestions for management of this soil are given in the discussion of capability unit IIe–2. Further help in planning management for a farm can be obtained from the local representative of the Soil Conservation Service, from the county agricultural agent, and from the staff of the State agricultural experiment station.

Foresters and others interested in woodland can refer to the part "Use of the Soils for Woodland," where the soils are grouped according to their suitability for specified kinds of trees and the factors affecting management of woodland are explained.

Sportsmen and others interested in wildlife can find in the section "Wildlife and Fish" information about the food and habitat preferences of the more common kinds of wildlife in the county.

Engineers and builders will want to refer to the section "Engineering Characteristics of the Soils."

People interested in science can learn how the soils were formed and how they are classified by reading the section "Genesis, Morphology, and Classification of the Soils."

Newcomers in Walton County and others who are not familiar with the county will be interested in "General Nature of the Area," which discusses geology, climate, and other topics; "General Soil Map," which describes the broad pattern of the soils; and "Additional Facts About the County," which gives miscellaneous information.

* * * *

Fieldwork for this survey was completed in 1961. Unless otherwise indicated, all statements in the report refer to conditions in Walton County at that time. The survey is part of the technical assistance given by the Soil Conservation Service to the Upper Ocmulgee River Soil Conservation District.

Cover pictures: Angus cattle on permanent pasture; a well-managed stand of loblolly pine; a vegetated waterway in a field of corn.

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Contents

Series 1961, No. 12 Issued December, 1964

SOIL SURVEY OF WALTON COUNTY, GEORGIA

BY GROVER J. THOMAS, JR., AND RAY J. TATE, SOIL CONSERVATION SERVICE

JOHN H. JOHNSON, SIDNEY M. JONES, AND T. W. GREEN, SOIL CONSERVATION SERVICE, ASSISTED IN THE FIELD SURVEY

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE, AGRICULTURAL EXPERIMENT STATIONS

WALTON COUNTY is in the north-central part of Georgia (fig. 1). It measures 23 miles from east to west and 19 miles from north to south. The total area is 330 square miles or 211,200 acres.

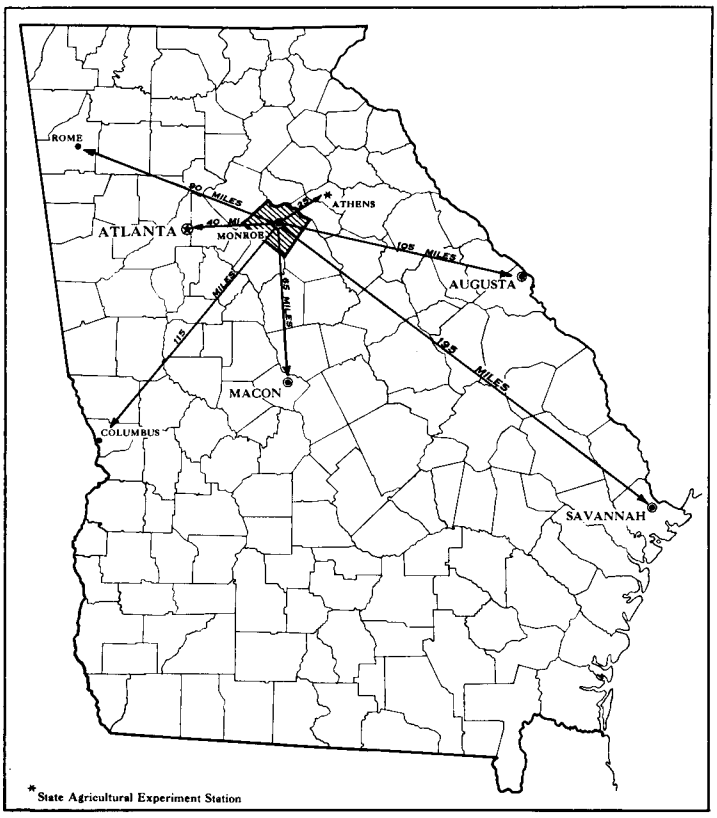

Figure 1.—**Location of Walton County, Georgia.**

Most of the county consists of very gently sloping to strongly sloping uplands, but some areas near streams are steep. The flood plains of the rivers and creeks are level to nearly level.

Walton County has been primarily an agricultural county since early settlement. Cotton, corn, and grass are the principal crops; cotton is the chief cash crop. Dairy cattle, beef cattle, and poultry are also important to the economy.

Industry has made substantial gains in recent years. In 1960, according to the census of that year, more people were employed in industry than in agriculture. The textile industry is the most important in the county.

General Nature of the Area

This section discusses the geology, drainage, physiography, water supply, and climate of Walton County.

Geology, Drainage, and Physiography

Walton County is in the middle of the Piedmont Plateau section of Georgia. It is underlain by both igneous and metamorphic rocks. About 60 percent of the acreage is underlain by biotite gneiss and schist, which includes injected gneiss; the rest, by granite gneiss, which includes diorite injected gneiss. The effect of these rocks on the soils is discussed in the section "Genesis, Morphology, and Classification of the Soils."

The Apalachee, Yellow, and Alcovy Rivers drain all of the county. About half of the acreage slopes southeast to the Apalachee River, and the rest slopes south to the Yellow and Alcovy Rivers. In most places, the top of the ridge that separates these drainage areas is slightly more than 900 feet above sea level. The ridge extends from Social Circle through Monroe and Bold Spring, and westward to the county line. The lowest point in the county, about 650 feet above sea level, is near the Newton County line between Big Flat Creek and the Alcovy River.

Practically all the upland is well drained by one of many branching creeks or intermittent streams. Most of the upland is gently sloping or rolling, but some areas along drainageways are more strongly sloping.

Water Supply

The Alcovy River, the Apalachee River, Jacks Creek, and many small streams are excellent sources of water for cities, industries, and farms. On most farms, dug wells about 40 to 60 feet deep provide water for domestic use. These wells are usually a dependable source of water throughout the year. Branches, creeks, larger streams, and farm ponds are the main source of water for cattle and other livestock (fig. 2).

Climate [1]

Walton County is in the southern part of the North Central Climatological Division. Summer days in the county are warm and occasionally hot. Daytime temperatures reach or exceed 90° F. on one-half to two-thirds

[1] Prepared by HORACE S. CARTER, State climatologist, U.S. Weather Bureau, Athens, Ga.

Figure 2.—**Dairy cows drinking from a farm pond.**

of the days during June, July, and August, and they reach 100° on one or more days during at least half the summers. Summer nights are usually mild and comfortable. By early morning the temperature generally drops to below 70°. The average minimum temperature for the 3 summer months is about 67°.

The mountains to the north and northwest help prevent the flow of extremely cold air into the area, but some moderately cold weather may be expected each winter. Cold spells that drop early morning temperatures to freezing or below are usually of short duration, and they alternate with longer periods of comparatively mild winter weather. A temperature of 32°, or less, may be expected on about fifty days during an average winter; a drop to 20°, or below, may occur on about 4 or 5 days. Daytime temperatures usually rise to above freezing, even during the coldest weather. Table 1 gives additional temperature data for the county.

The weather in spring is usually windy and wet but changes frequently and abruptly. It is usually cooler than the weather in autumn. Mild, sunny weather for long periods is typical of autumn.

An average frost-free growing season in the county is about 225 days. The last freeze in spring usually occurs late in March; the first freeze in fall, about the second week in November. Table 5 gives the probability of freezes of specified intensity occurring after certain dates in spring and before certain dates in fall.

Precipitation averages about 47 inches annually and is fairly well distributed throughout the year. No month has an average of less than 2 inches and only March, usually the wettest month, averages more than 5 inches. About one-half the yearly rainfall occurs from December through April, when the area is frequently exposed to migratory low-pressure centers and fronts. Most of the precipitation during the warm season is in the form of local convective showers that develop in warm, moist air moving slowly northward over the State from the Gulf of Mexico. Heavy rains that amount to 1 inch or more in 24 hours occur on an average of 11 times each year. They are most likely in the period January through March and least likely in October and November. Thunderstorms are fairly frequent in spring and summer and are occasionally accompanied by damaging winds. Tornadoes and severe windstorms have been rare in the county.

Snowfall in the area is inconsequential. Only a light snowfall may be expected during most winters. Tables 1, 2, 3, and 4 give additional precipitation data.

Based on available records from surrounding areas, relative humidity averages range from 80 to 90 percent in early morning, and from 50 to 60 percent in early afternoon. Average wind speeds range from about 7

TABLE 1.—*Temperature and precipitation data*

[Based on records from nearby stations of the U.S. Weather Bureau]

Month	Temperature				Precipitation		
	Average daily maximum	Average daily minimum	2 years in 10 will have at least 4 days with—		Average monthly total	1 year in 10 will have—	
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—
	°F	°F	°F	°F	Inches	Inches	Inches
January	56. 7	34. 5	73	20	4. 72	2. 0	9. 3
February	59. 5	35. 5	74	22	4. 57	1. 7	7. 9
March	66. 0	40. 2	81	26	5. 52	2. 8	9. 6
April	75. 8	48. 3	87	35	4. 26	1. 6	8. 8
May	84. 3	57. 1	94	44	3. 32	. 9	5. 8
June	90. 8	65. 2	98	58	3. 54	1. 8	6. 0
July	91. 9	68. 0	99	62	4. 44	2. 5	6. 5
August	91. 6	67. 1	99	61	3. 43	1. 4	6. 5
September	86. 7	61. 4	96	51	2. 83	. 8	5. 0
October	77. 4	49. 8	87	36	2. 48	. 4	5. 2
November	65. 4	40. 1	78	25	2. 99	. 8	7. 8
December	56. 7	34. 2	72	19	4. 33	1. 3	8. 0
Year	75. 2	50. 1	101	14	46. 43	35. 2	65. 2

miles per hour in August to almost 11 miles per hour in February and March. The winds are generally from the northeast or northwest in fall and winter and are variable or southerly in spring and summer.

Because of the range in rainfall, temperature, wind, and humidity, the climate is ideal for the growing of many different crops. The soils are usually wet throughout the winter and early in spring. Nevertheless, they dry out soon enough to permit tillage.

Except for small grain, clover, and grass, crops are usually planted and become established in April, May, and June. During these months, the moisture content is such that fieldwork is feasible and seeds can germinate. As a rule, moisture conditions in fall are favorable for preparation of a seedbed and germination of plants. When there is little rain during the fall months, germination is retarded and preparation of a seedbed is difficult in the less friable soils.

The growing season, or frost-free period, in this county is long enough that cotton, corn, grain sorghum, millet, tomatoes, watermelons, beans, potatoes, and similar crops can be planted over a period of many weeks and still have time to mature. Winter is mild enough that small grain sown in the fall will survive. Small grain seeded early provides grazing for livestock during the winter, although it grows slowly from November 20 to February 20.

Tall fescue, clover, and other perennial pasture plants grow during winter when the temperature is above 40°F. Normally, the temperature is low enough for long enough periods to allow peaches and similar crops to have a dormant season.

TABLE 2.—*Average number of days per year (by month) with rainfall equal to or greater than stated amounts*

[Based on records from nearby stations of the U.S. Weather Bureau for 10-year period—1951 through 1960]

Rainfall equal to or greater than—	Average number of days in—												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
0.10 inch	6	7	8	6	6	6	8	4	5	4	6	6	72
0.25 inch	5	6	6	4	4	4	5	3	4	3	4	4	52
0.50 inch	3	3	5	2	2	2	3	1	2	2	2	3	30

TABLE 3.—*Number of days in 10 years (by month) with rainfall equal to or greater than stated amounts*

[Based on records from nearby stations of the U.S. Weather Bureau]

Rainfall equal to or greater than—	Total number of days in—												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	10-Year Period
1 inch	19	14	13	9	8	5	8	8	11	3	2	8	108
2 inches	0	0	4	3	1	0	0	0	3	1	0	2	14
3 inches	0	0	1	1	0	0	0	0	0	0	0	0	2
4 inches	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 4.—*Number of 2-, 4-, and 6-week periods in which no day has 0.25 inch or more of precipitation*

[Based on records from nearby stations of the U.S. Weather Bureau]

Periods equal to or greater than—	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	10-Year Period
2 weeks	4	4	2	7	8	7	4	11	7	8	7	6	75
4 weeks	1	0	0	1	4	2	1	1	2	2	1	0	15
6 weeks	0	0	0	0	1	0	0	0	0	0	0	0	1

TABLE 5.—*Probabilities of last freezing temperature in spring and first in fall*

[Based on records from nearby stations of the U.S. Weather Bureau]

Probability	Dates for given probability and temperature		
	24° F.	28° F.	32° F.
Spring:			
1 year in 10, after	Mar. 15	Mar. 30	Apr. 15
2 years in 10, after	Mar. 10	Mar. 24	Apr. 10
5 years in 10, after	Feb. 20	Mar. 14	Mar. 28
Fall:			
1 year in 10, before	Nov. 17	Nov. 9	Oct. 28
2 years in 10, before	Nov. 25	Nov. 11	Nov. 2
5 years in 10, before	Dec. 1	Nov. 20	Nov. 11

How Soils Are Mapped and Classified

Soil scientists made this survey to learn what kinds of soils are in Walton County, where they are located, and how they can be used.

They went into the county knowing they likely would find many soils they had already seen, and perhaps some they had not. As they traveled over the county, they observed steepness, length, and shape of slopes; size and speed of streams; kinds of native plants or crops; kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by roots of plants.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. To use this report efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Cecil and Appling, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that go with their behavior in the natural, untouched landscape. Soils of one series can differ somewhat in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man.

Many soil series contain soils that differ in texture of their surface layer. According to such differences in texture, separations called soil types are made. Within a series, all the soils having a surface layer of the same texture belong to one soil type. Cecil coarse sandy loam and Cecil sandy clay loam are two soil types in the Cecil series. The difference in the texture of their surface layers is apparent from their names.

Some soil types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting their use, that practical suggestions about their management could not be made if they were shown on the soil map as one unit. Such soil types are divided into phases. The name of a soil phase indicates a feature that affects management. For example, Cecil coarse sandy loam, 2 to 6 percent slopes, eroded, is one of several phases of Cecil coarse sandy loam, a soil type that, in this county, ranges from very gently sloping to moderately steep.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that greatly help in drawing boundaries accurately. The soil map in the back of this report was prepared from the aerial photographs.

The areas shown on the soil map are called mapping units. On most maps detailed enough to be useful in planning management of farms and fields, a mapping unit is nearly equivalent to a soil type or a phase of a soil type. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil type or soil phase.

In preparing some detailed maps, areas are shown that are so rocky, so shallow, or so frequently worked by wind and water that they scarcely can be called soils. These areas are shown on a soil map like other mapping units, but they are given descriptive names, such as Gullied land or Rock outcrop, and are called land types rather than soils. Also, the soil scientists have a problem of delineating on most soil maps areas where different kinds of soils and land types are so intricately mixed or occur in individual areas of such small size that it is not practical to show them separately on the map. Therefore, they show such areas as one mapping unit and call it a complex. Cecil-Gullied land complex is an example in this county.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soils in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soils. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way that it is readily useful to different groups of readers, among them farmers, ranchers, managers of woodland, engineers, and homeowners. Grouping soils that are similar in suitability for each specified use is the method of organization commonly used in the soil survey reports. Based on the yield and practice tables and other data, the soil scientists set up trial groups, and test them by further study and by consultation with farmers, agronomists, engineers, and others. Then, the

scientists adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

After study of the soils in a locality and of the way they are arranged, it is possible to make a general map that shows several main patterns of soils, called soil associations. Such a map is the colored general soil map in the back of tbis report. Each association, as a rule, contains a few major soils and several minor ones, in a pattern that is characteristic although not strictly uniform.

The soils within any one association are likely to differ from each other in some properties, for example, slope, depth, stoniness, or natural drainage. Thus, the general soil map shows, not kinds of soil at specific places, but patterns consisting of several different kinds of soil.

Each soil association is named for the major soil series in it. The major soil or soils of one association may occur in another association also, but in a different pattern.

The general soil map is useful in getting a general idea of the soils, in comparing different parts of the county, or in locating large areas suitable for some particular kind of agriculture or other land use.

The five soil associations in Walton County are discussed in the paragraphs that follow.

1. Cecil-Lloyd-Appling association

Deep, well-drained, red or mottled red and yellow soils on uplands

This association is characterized by broad to narrow, very gently sloping to sloping interstream divides and short, moderately steep side slopes. The strongest slopes are along the numerous branching drainageways that join in a dendritic pattern. The several separate tracts of this association are scattered throughout the eastern two-thirds of the county and make up about 53 percent of the total acreage.

Dominant in this association are Cecil, Lloyd, and Appling soils. Cecil soils make up about 70 percent of the association; Lloyd soils, 10 percent; and Appling soils, 10 percent. These soils are all well drained. They have a surface layer of friable sandy clay loam or clay loam, except in a sizable area where the surface layer consists of friable sandy loam or coarse sandy loam. Both Cecil and Lloyd soils have a mottle-free subsoil. Lloyd soils generally have a darker red subsoil than Cecil soils. At a depth of about 17 inches, Appling soils are mottled with red and yellow.

Also in this association are Madison, Durham, and Colfax soils, and Local alluvial land, which together make up about 10 percent of the association. Madison soils are more micaceous than Cecil, Lloyd, and Appling soils. Durham soils are less red than Cecil and Lloyd soils and browner than Appling soils. Small areas of somewhat poorly drained Colfax soils are in depressions, near the head of drains, and along the base of slopes. Areas of well-drained Local alluvial land are along drainageways.

Most of this association is severely eroded, but a large acreage is only moderately eroded. In the severely eroded places, all or nearly all of the original surface layer is gone and material from the subsoil, which is sandy clay loam to clay, is exposed.

Except in areas that are only moderately eroded, tilth is likely to be poor. The soils, in general, respond to good management and are suited to a wide range of crops. Some of the common crops are cotton, corn, small grains, tall fescue, white clover, and Coastal bermudagrass. Cultivated crops are grown mainly on the broad, smooth ridges. Most of the once-cropped steeper slopes and adjacent draws are now in pine or in improved pasture. Some of the steepest slopes have never been cleared; they support mixed stands of hardwoods and pine. Most of the soils in this association are in capability class III.

The farms in this association are of average size for the county. General livestock and dairy farms (fig. 3)

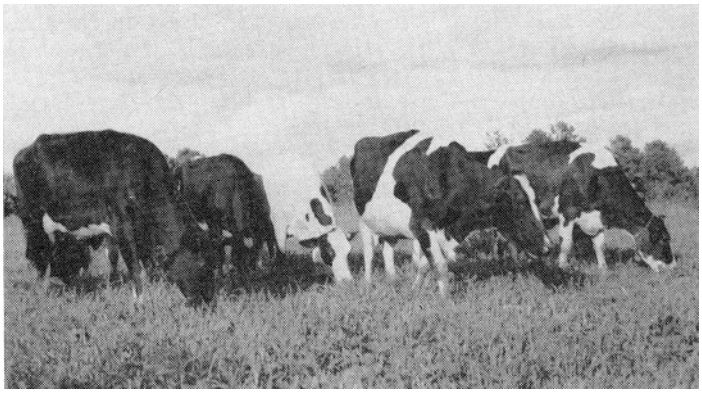

***Figure 3.*—Dairy cows on a typical dairy farm within association 1 are shown grazing on supplemental pasture of millet. The soil is Lloyd sandy loam, 2 to 6 percent slopes, eroded.**

are important, although row-crop farms are more numerous. A large proportion of the farms are operated by tenants, but most are farmer owned.

2. Appling-Louisburg-Cecil association

Well-drained to somewhat excessively drained soils on uplands; gently sloping ridgetops and fairly steep side slopes

This association is characterized by narrow to broad, gently sloping ridgetops, strongly sloping to steep side slopes, many rock outcrops, and many well-defined drainageways. It is in the western part of the county and makes up about 30 percent of the total acreage of the county.

Dominant in this association are Appling, Louisburg, and Cecil soils. Appling soils make up about 45 percent of the association; Louisburg soils, 25 percent; and Cecil soils, 15 percent. These soils are well drained to somewhat excessively drained and have a friable surface layer of coarse sandy loam, loamy coarse sand, or stony loamy coarse sand. Cecil soils have a red, mottle-free subsoil. Appling soils are mottled with red and yellow at a depth of about 17 inches. Louisburg soils are coarse textured throughout the profile.

Also in this association are Durham, Colfax, and Worsham soils, and Local alluvial land, which together make up about 15 percent of the association. Durham soils are less red than Cecil soils and browner than Appling soils,

and they have more distinct horizons than Louisburg soils. Small areas of somewhat poorly drained Colfax soils and poorly drained Worsham soils are in depressions, near the head of drains, and along the base of slopes. Areas of well-drained Local alluvial land are along drainageways.

Much of this association is eroded. In some places, all or nearly all of the original surface layer is gone and the subsoil is exposed.

This association does not have high agricultural potential. At least half of it is poorly suited to either crops or pasture because of steep slopes and extreme erodibility, or because the soils are either shallow and droughty or are stony. Cultivated crops are grown mainly on the broad, smooth ridges. Some of the common crops are cotton, corn, small grains, tall fescue, white clover, and Coastal bermudagrass. Most of the once-cropped steeper slopes and adjacent draws are now in pine. Some of the steepest slopes and all of the stony soils have never been cleared; they support mixed stands of hardwoods and pine. Most of the soils in this association are in capability classes IV and VI, but a large acreage is in classes VII and VIII.

In this association are mostly small, part-time farms that consist largely of cutover forest.

3. Alluvial lands-Chewacla-Wehadkee association

Alluvial soils on nearly level flood plains

This association is characterized by broad to narrow, nearly level flood plains of recent alluvium. The streams have well-defined channels and have cut to bedrock in some places. The channels, however, are clogged and silted in many places. Separate tracts of this association are widely scattered and make up about 10 percent of the county.

Dominant in this association are Alluvial land, Chewacla soils, and Wehadkee soils. Alluvial land makes up about 70 percent of the association; Chewacla soils, 15 percent; and Wehadkee soils, 10 percent. Alluvial land is moderately well drained to poorly drained, and the texture of the soil material ranges from silt loam to loamy sand. Chewacla soils are somewhat poorly drained, and Wehadkee soils are poorly drained. Both have a surface layer of silt loam and a subsoil of silt loam to silty clay loam.

Also in this association are moderately well drained Altavista soils, well drained Wickham soils, and somewhat poorly drained Augusta soils. Together they make up about 5 percent of the association. All of these soils are on stream terraces. They developed in older alluvium and have much more distinct horizons than the alluvial lands and Chewacla and Wehadkee soils.

Much of this association is poorly drained. About one-third is too wet for cultivated crops. Only about 15 percent—the well drained and moderately well drained soils on stream terraces and moderately well drained areas of Alluvial land—is suitable for tilled crops without artificial drainage. Some of the better drained areas are used for improved pasture. If the other areas are properly drained, they too produce good to excellent pasture. The poorly drained areas support mixed stands of hardwoods. Most of the soils in this association are in capability classes III and IV.

No particular type of management tenure predominates in this association, inor any particular size of farm.

4. Lloyd-Davidson association

Deep, well-drained soils with dark-red subsoil, on very gently sloping to steep uplands

This association is characterized by narrow to fairly broad, very gently sloping to gently sloping ridgetops, moderately steep to steep side slopes, and numerous small drainageways. It occurs chiefly in the north-central part of the county and makes up about 5 percent of the total acreage.

Dominant in this association are Lloyd and Davidson soils. Lloyd soils make up about 65 percent of the association, and Davidson soils, 20 percent. Both are well drained and have a friable surface layer of sandy loam, loam, clay loam, or clay. In some places the surface layer is stony loam. The subsoil is chiefly dark-red to dusky-red clay loam to clay. Lloyd soils are less red than Davidson soils.

Also in this association are well-drained Cecil soils and well-drained Local alluvial land, which together make up about 15 percent of the association. Cecil soils are less red than Lloyd and Davidson soils. Local alluvial land is along drainageways.

Almost all of this association is eroded. In many places, all of the original surface layer is gone and the dark-red to dusky-red subsoil material is exposed.

The soils, in general, respond to good management and, except in the severely eroded areas, are easily tilled. They are suited to a wide range of crops. Some of the common crops are cotton, corn, small grains, tall fescue, white clover, and Coastal bermudagrass. Row crops are grown mainly on the smooth ridgetops. Most of the once-cropped steeper slopes and the adjacent draws are now in pine or in improved pasture. Some of the steepest slopes have never been cleared; they support mixed stands of hardwoods and pine. Most of the soils in this association are in capability classes III and IV.

Most of the farms in this association are larger than the average for the county and are farmer owned. There are about equal numbers of general farms and combination general and livestock farms.

5. Louisburg-Appling association

Light-colored stony soils and mottled red and yellow soils on very gently sloping to steep uplands

This association is characterized by steep, stony peaks that rise about 200 feet above the surrounding areas and by smooth, sloping ridges that have many fine quartz crystals on the surface. It is dissected by many drainageways. The three separate tracts of this association make up about 2 percent of the county. These tracts are located east of Monroe, northeast of Jersey, and south of Walnut Grove.

Dominant in this association are Louisburg and Appling soils. Louisburg soils make up about 45 percent of the association, and Appling soils, 40 percent. These soils are well drained to somewhat excessively drained and have a surface layer of stony loamy coarse sand or coarse sandy loam. Appling soils have a well-developed subsoil that, at a depth of about 17 inches, is clayey and mottled with red and yellow. Louisburg soils are coarse textured throughout the profile.

Also in this association are well-drained Cecil and Lloyd soils, somewhat poorly drained Colfax soils, and well-drained Local alluvial land. Together they make up about 15 percent of the association. Cecil and Lloyd soils are redder than Appling and Louisburg soils. Colfax soils in this association are in depressions, near the head of drains, and along the base of slopes. Local alluvial land is along drainageways.

Appling soils, which are on the smooth, sloping ridges, are intensively cultivated or in pasture. These soils are generally in good tilth, and they respond well to management. They are suited to a fairly wide range of crops, including cotton, corn, tall fescue, and Coastal bermudagrass. Most of the ridges are eroded. In some places, all or nearly all of their original surface layer is gone and the mottled subsoil is exposed.

The steep, stony Louisburg soils have never been cleared and are better suited to trees than to cultivated crops or pasture. They support mixed stands of hardwoods and pine.

Most of the soils in this association are in capability classes II and VII. Average-sized general farms, most of them operated by tenants, predominate.

Descriptions of the Soils

This section describes in detail the soils in Walton County and discusses their use and suitability for agriculture. Descriptions of the soil series, arranged in alphabetic order, give the characteristics that are common to all the soils in each series. Descriptions of the mapping units give the characteristics that differentiate types and phases within each series.

The first soil described in each series is the one most nearly typical of the series. The profile of this first mapping unit is representative of all the soils of the series. Differences in surface texture, in slope, and in degree of erosion are evident from the names of the mapping units. The section "Genesis, Morphology, and Classification of the Soils" describes in more detail a soil profile for each series.

Some technical terms are used in the descriptions of soil series and mapping units because nontechnical terms cannot convey precisely the same meaning. Some of these technical terms are defined in the Glossary, and some are defined in the section "How Soils Are Mapped and Classified."

The soil map at the back of this report shows the location and distribution of the individual soils. Table 6 gives the approximate acreage and proportionate extent of the soils.

TABLE 6.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent	Soil	Acres	Percent
Alluvial land	2,730	1.3	Chewacla silt loam	3,370	1.6
Alluvial land, moderately wet	8,000	3.8	Colfax sandy loam, 2 to 6 percent slopes	650	.3
Alluvial land, wet	4,415	2.1	Colfax sandy loam, 6 to 10 percent slopes, eroded	120	.1
Altavista fine sandy loam, 2 to 6 percent slopes	550	.3	Davidson loam, 2 to 6 percent slopes, eroded	455	.2
Appling coarse sandy loam, 0 to 2 percent slopes	95	(1)	Davidson loam, 6 to 10 percent slopes, eroded	210	.1
Appling coarse sandy loam, 2 to 6 percent slopes	390	.2	Davidson clay, 2 to 6 percent slopes, severely eroded	470	.2
Appling coarse sandy loam, 2 to 6 percent slopes, eroded	17,400	8.2	Davidson clay, 6 to 10 percent slopes, severely eroded	495	.2
Appling coarse sandy loam, 6 to 10 percent slopes, eroded	10,930	5.2	Davidson clay, 10 to 15 percent slopes, severely eroded	265	.1
Appling coarse sandy loam, 10 to 15 percent slopes, eroded	550	.3	Durham loamy coarse sand, 0 to 2 percent slopes	145	.1
Appling sandy clay loam, 2 to 6 percent slopes, severely eroded	1,465	.7	Durham loamy coarse sand, 2 to 6 percent slopes	1,835	.9
Appling sandy clay loam, 6 to 10 percent slopes, severely eroded	3,760	1.8	Gullied land	30	(1)
Appling sandy clay loam, 10 to 15 percent slopes, severely eroded	610	.3	Lloyd sandy loam, 2 to 6 percent slopes, eroded	2,495	1.2
Augusta fine sandy loam	200	.1	Lloyd sandy loam, 6 to 10 percent slopes, eroded	1,195	.6
Cecil coarse sandy loam, 2 to 6 percent slopes	420	.2	Lloyd sandy loam, 10 to 15 percent slopes, eroded	415	.2
Cecil coarse sandy loam, 2 to 6 percent slopes, eroded	16,995	8.0	Lloyd sandy loam, 15 to 25 percent slopes, eroded	535	.2
Cecil coarse sandy loam, 6 to 10 percent slopes, eroded	4,925	2.3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded	3,290	1.5
Cecil coarse sandy loam, 10 to 15 percent slopes, eroded	2,490	1.2	Lloyd clay loam, 6 to 10 percent slopes, severely eroded	4,560	2.2
Cecil coarse sandy loam, 15 to 25 percent slopes, eroded	1,225	.6	Lloyd clay loam, 10 to 15 percent slopes, severely eroded	2,625	1.2
Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded	28,280	13.4	Lloyd clay loam, 15 to 25 percent slopes, severely eroded	755	.4
Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded	35,500	16.8	Lloyd clay loam, 25 to 45 percent slopes, severely eroded	130	.1
Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded	15,625	7.4	Lloyd stony loam, 10 to 25 percent slopes	120	.1
Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded	1,305	.6	Lloyd-Gullied land complex, 6 to 10 percent slopes	215	.1
Cecil-Gullied land complex, 6 to 10 percent slopes	1,075	.5	Lloyd-Gullied land complex, 10 to 15 percent slopes	215	.1
Cecil-Gullied land complex, 10 to 15 percent slopes	535	.2	Local alluvial land	3,645	1.7

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TABLE 6.—*Approximate acreage and proportionate extent of the soils*—Continued

Soil	Acres	Percent	Soil	Acres	Percent
Louisa fine sandy loam, 15 to 45 percent slopes	535	.2	Madison sandy clay loam, 6 to 10 percent slopes, severely eroded	940	.4
Louisburg loamy coarse sand, 2 to 6 percent slopes	1,080	.5	Madison sandy clay loam, 10 to 15 percent slopes, severely eroded	730	.3
Louisburg loamy coarse sand, 6 to 10 percent slopes	3,960	1.9	Madison sandy clay loam, 15 to 25 percent slopes, severely eroded	235	.1
Louisburg loamy coarse sand, 10 to 15 percent slopes	4,575	2.2	Rock outcrop	2,010	.9
Louisburg loamy coarse sand, 15 to 25 percent slopes, eroded	4,715	2.2	Wehadkee silt loam	1,835	.9
Louisburg stony loamy coarse sand, 6 to 10 percent slopes	375	.2	Wickham fine sandy loam, 2 to 6 percent slopes, eroded	415	.2
Louisburg stony loamy coarse sand, 10 to 25 percent slopes	760	.4	Worsham soils, 2 to 6 percent slopes	265	.1
Louisburg stony loamy coarse sand, 25 to 45 percent slopes	400	.2	Mine and borrow pits	20	(1)
Madison sandy clay loam, 2 to 6 percent slopes, severely eroded	640	.3	Total area of county	211,200	100.0

[1] Less than 0.1 percent of the total area.

Alluvial Land

Alluvial land consists of layers of sediment recently deposited by water on level or nearly level flood plains along streams. These sediments are variable in texture and color within short distances, but in most areas they have been in place long enough for plants to become established. Alluvial land is subject to overflow and deposition of sediments.

Alluvial land (0 to 2 percent slopes) (Alm).—This land type is widely distributed on nearly level flood plains. It consists of thick deposits of mixed alluvium, generally stratified sand and silt. Texture and color vary widely within short distances. Mottles are common below a depth of 24 inches.

The reaction is strongly acid to very strongly acid. Natural fertility is low. Tilth is good. Drainage is moderately good. Permeability and the rate of infiltration are moderate to rapid, and runoff is slow. The water table is moderately low much of the time, and the available moisture capacity is high.

Alluvial land is suited to a wide range of crops. It responds to management, and, in spite of a slight to moderate hazard of flooding, it can be used intensively. About 80 percent of the acreage is in forest or is idle, and the rest is cultivated or used as pasture. (Capability unit IIw–2; woodland group 1.)

Alluvial land, moderately wet (0 to 2 percent slopes) (Alp).—This land type is widely distributed on nearly level flood plains. It consists of thick deposits of alluvial material, generally stratified sand and silt. Texture and color vary widely within short distances. Mottles are common beginning at a depth of 10 inches.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is medium. Tilth is good, except in a few wet places. Drainage is somewhat poor. Permeability and the rate of infiltration are moderate to rapid, the available moisture capacity is high, and runoff is slow. The water table is at or near the surface during wet periods and from 18 inches to 4 feet below the surface during dry periods.

This land type is poorly suited to cultivation because of somewhat poor drainage and a moderate hazard of flooding. It responds fairly well to management, however, and if properly drained it is well suited to pasture and to some cultivated crops. About 85 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IIIw–2; woodland group 8.)

Alluvial land, wet (0 to 2 percent slopes) (Avp).—This land type is widely distributed on nearly level flood plains. It consists of thick deposits of alluvial material, generally stratified sand and silt. Texture varies widely within short distances. The plow layer is gray and mottled.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is medium. Tilth is poor. Drainage is poor. Permeability and the rate of infiltration are slow to moderate, the available moisture capacity is high, and runoff is slow to ponded. The water table is at or just below the surface most of the time.

Unless drained and protected from frequent floods, this land type is unsuitable for cultivation. If adequately drained (fig. 4) it is suited to a limited number of crops only; it is better suited to pasture and hardwoods than to cultivated crops. About 95 percent of the acreage is in forest. The rest is used as pasture or is idle. (Capability unit IVw–1; woodland group 8.)

Altavista Series

The Altavista series consists of deep, moderately well drained soils that developed in old alluvium on stream terraces. These soils have a surface layer of light olive-brown to light yellowish-brown fine sandy loam over a thin layer of light yellowish-brown to olive-yellow sandy loam. The subsoil is strong-brown to olive-yellow sandy clay loam; it is commonly mottled beginning at a depth of about 18 inches.

The slope range is 2 to 6 percent. The vegetation is chiefly sweetgum, oak, hickory, pine, elm, and maple.

The reaction is medium acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. The available moisture capacity is moderately high, and permeability is moderately slow.

Altavista soils occur with Augusta and Wickham soils, which are also on nearly level to very gently sloping stream

Figure 4.—**Open drainage ditch for water control on Alluvial land, wet (0 to 2 percent slopes).**

terraces. Altavista soils are better drained than Augusta soils; they are less well drained than Wickham soils, and are more yellow in the subsoil.

In this county, Altavista soils occur as small areas, chiefly along the larger streams. The total acreage is less than 1 percent of the county. About 60 percent of this is cultivated or is used as pasture.

Altavista fine sandy loam, 2 to 6 percent slopes (AkB).—This is a deep, moderately well drained soil on stream terraces. The major horizons are—

0 to 12 inches, light olive-brown, very friable fine sandy loam; commonly light yellowish-brown to olive-yellow sandy loam in the lower few inches.
12 to 37 inches, olive-yellow, friable light sandy clay loam in the uppermost 6 inches; mottled, firm sandy clay loam with moderate, medium, angular and subangular blocky structure in the lower part.
37 to 44 inches +, light yellowish-brown and olive-yellow, friable coarse sandy clay loam mottled with red and pale yellow.

The color of the surface layer ranges from light yellowish brown to light olive brown, and the color of the subsoil from olive yellow to strong brown. The depth to mottling ranges from 15 to 20 inches.

Some sizable areas in which the subsoil is sandy clay are mapped with this soil.

The reaction is medium acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. The surface layer is in good tilth. Permeability is moderately slow, the rate of infiltration is moderate, the available moisture capacity is moderately high, and surface runoff is medium.

This soil is suited to a wide range of crops. It responds to management, especially to fertilization, and it is well suited to moderately intensive use. Most of the acreage has been cultivated. At present, about 60 percent is cultivated or used as pasture, and the rest is in forest or is idle. Erosion is a slight to moderate hazard in cultivated areas. (Capability unit IIe–2; woodland group 3.)

Appling Series

The Appling series consists of deep, well-drained soils that formed on uplands in material weathered from granite, gneiss, and coarse-grained schist. Where they are not severely eroded, these soils have a surface layer of light brownish-gray, light olive-brown, or light yellowish-brown coarse sandy loam. The upper part of the subsoil is yellowish-brown sandy clay loam. The lower part, below a depth of 17 inches, consists of mottled, red, yellowish-red, and olive-yellow clayey material. Severely eroded Appling soils have a surface layer of brownish-yellow to light-red sandy clay loam, and a subsoil of mottled, red, yellowish-red, and olive-yellow sandy clay loam to clay.

The depth to bedrock ranges from 3 to 20 feet, but in most places it is less than 15 feet. The slope range is 0 to 15 percent, but a major part of the acreage has a slope of between 2 and 10 percent. The vegetation is chiefly white oak, post oak, red oak, blackjack oak, and hickory. Some blackgum, sweetgum, poplar, and shortleaf pine are also present.

The reaction is very strongly acid to extremely acid. Natural fertility is low, and the organic-matter content is low. Permeability is moderately slow.

Appling soils occur with Cecil, Durham, and Louisburg soils. Their subsoil is not so red as that of Cecil soils and not so brown as that of Durham soils. They are deeper than Louisburg soils, and they have more distinct horizons.

Large areas of Appling soils are scattered throughout the county. The total acreage is about 16 percent of the county. Of this, slightly more than half is cultivated or is used as pasture. Loblolly pine and shortleaf pine grow in areas formerly cultivated but now abandoned.

Appling coarse sandy loam, 2 to 6 percent slopes, eroded (AxB2).—This is a deep, well-drained soil on the uplands. Its clayey subsoil is mottled in the lower part. The major horizons are—

0 to 8 inches, light olive-brown to light yellowish-brown, friable coarse sandy loam.
8 to 17 inches, yellowish-brown, friable sandy clay loam; weak, medium, subangular blocky structure.
17 to 30 inches, mottled, red, yellowish-red, and olive-yellow, firm clay; moderate, medium, subangular blocky structure.
30 to 42 inches +, mottled, yellowish-red and olive-yellow, friable sandy clay loam; structureless; the uppermost few inches is firm and has moderate, medium, subangular blocky structure.

Many small, angular, quartz pebbles are scattered on the surface in a few places. Some areas are severely eroded, and in these areas the plow layer ranges from brownish-yellow to light-red sandy clay loam.

Some small areas in which the surface layer is sandy loam and loamy sand are mapped with this soil.

The reaction is very strongly acid to extremely acid. Natural fertility is low, and the organic-matter content is

low. The plow layer is in good tilth, except in the severely eroded areas. Permeability is moderately slow, the rate of infiltration is moderate, the available moisture capacity is moderately high, and surface runoff is medium.

This soil is well suited to moderately intensive use. It responds to management, especially to fertilization, and it is suited to a wide range of crops. Most of the acreage has been cropped, chiefly to cotton and corn. At present, about 85 percent is cultivated or used as pasture, and the rest is wooded or is idle. Erosion is a slight to moderate hazard in cultivated areas. (Capability unit IIe–2; woodland group 5.)

Appling coarse sandy loam, 0 to 2 percent slopes (AxA).—A thicker and grayer surface layer distinguishes this soil from Appling coarse sandy loam, 2 to 6 percent slopes, eroded. The surface layer is light brownish-gray coarse sandy loam and is 15 to 20 inches thick. The upper part of the subsoil is yellowish-brown sandy clay loam. The lower part is mottled, red, yellowish-red, and olive-yellow clay to clay loam.

Because of nearly level relief, a thick root zone, and good tilth, this soil is suited to a wide range of crops. During prolonged dry periods it is slightly droughty because of the thickness and texture of its surface layer. It can be row cropped almost continuously if a cover crop is grown occasionally to help in maintaining the supply of organic matter and in preserving good tilth. About 85 percent of the acreage is cultivated or is used as pasture, and the rest is in forest or is idle. (Capability unit IIs–1; woodland group 5.)

Appling coarse sandy loam, 2 to 6 percent slopes (AxB).—The surface layer of this soil is light brownish-gray coarse sandy loam. It is 12 to 16 inches thick. The upper part of the subsoil is yellowish-brown sandy clay loam. The lower part is mottled, red, yellowish-red, and olive-yellow clay to clay loam.

Because of a thick root zone, good tilth, and a moderately high available moisture capacity, this soil is well suited to moderately intensive use. Under good management, it is well suited to cultivation. Erosion is a slight to moderate hazard in cultivated areas. About 60 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IIe–2; woodland group 5.)

Appling coarse sandy loam, 6 to 10 percent slopes, eroded (AxC2).—Stronger slopes distinguish this soil from Appling coarse sandy loam, 2 to 6 percent slopes, eroded. The surface soil is light olive-brown to light yellowish-brown coarse sandy loam. The upper part of the subsoil is yellowish-brown sandy clay loam. The lower part, below a depth of about 17 inches, consists of mottled, red, yellowish-red, and olive-yellow clayey material.

This soil is generally in good tilth. It has a deep root zone. Drainage is favorable, and the available moisture capacity is moderately high. Because of the slope, runoff is medium in cultivated fields, and erosion is a moderate to severe hazard.

In a few places that are severely eroded, the plow layer is brownish-yellow to light-red sandy clay loam. Infiltration is slow in these places, and tilth is poor.

This soil can be cultivated if well managed. It is suited to a wide range of crops. About 85 percent of the acreage is cultivated or is used as pasture; the rest is in forest or is idle. (Capability unit IIIe–2; woodland group 5.)

Appling coarse sandy loam, 10 to 15 percent slopes, eroded (AxD2).—The surface layer of this soil consists of light olive-brown to light yellowish-brown coarse sandy loam. The upper part of the subsoil is yellowish-brown sandy clay loam. The lower part, below a depth of about 17 inches, consists of mottled, red, yellowish-red, and olive-yellow clayey material.

Unlike Appling coarse sandy loam, 2 to 6 percent slopes, eroded, this soil is poorly suited to frequent cultivation. Because of the strong slope, surface runoff is moderately rapid in cultivated fields and erosion is a severe hazard.

Some places are severely eroded. In these, the plow layer is brownish-yellow to light-red sandy clay loam, tilth is poor, and infiltration is slow.

In spite of the severe erosion hazard, this soil can be cropped occasionally if it is well managed. About 75 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IVe–1; woodland group 5.)

Appling sandy clay loam, 2 to 6 percent slopes, severely eroded (AnB3).—The 5- to 7-inch plow layer of this soil is brownish-yellow to light-red sandy clay loam. This layer is a mixture of remnants of the original surface layer and material from the upper part of the subsoil. In the most severely eroded areas, mottled, red, yellowish-red, and olive-yellow clayey material from the subsoil is at the surface.

Because of the slope and the slow rate of infiltration, surface runoff is medium to moderately rapid. Erosion is a moderate to severe hazard. Tilth is poor. Nevertheless, under good management this soil is suited to a fairly wide range of crops. About 50 percent of the acreage is in forest or is idle; the rest is cultivated or is used as pasture (fig. 5). (Capabilty unit IIIe–2; woodland group 4.)

Figure 5.—**Unimproved pasture on Appling sandy clay loam, 2 to 6 percent slopes, severely eroded. In the background, a poor stand of loblolly pine on Cecil-Gullied land complex, 6 to 10 percent slopes.**

Appling sandy clay loam, 6 to 10 percent slopes, severely eroded (AnC3).—The 5- to 7-inch plow layer of this soil is brownish-yellow to light-red sandy clay loam. This layer is a mixture of remnants of the original surface layer and material from the upper part of the subsoil. In the

most severely eroded areas, the mottled, red, yellowish-red, and olive-yellow clayey subsoil material is at the surface.

Because of the slope and the slow rate of infiltration, surface runoff is moderately rapid. Erosion is a severe hazard in cultivated areas. Tilth is poor. Nevertheless, if well managed, this soil can be cultivated occasionally. It is well suited to permanent pasture and to pine forest. About 55 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IVe–1; woodland group 4.)

Appling sandy clay loam, 10 to 15 percent slopes, severely eroded (AnD3).—The 5- to 7-inch plow layer of this soil is brownish-yellow to light-red sandy clay loam. This layer is a mixture of remnants of the original surface layer and material from the upper part of the subsoil. In the most severely eroded areas, the mottled, red, yellowish-red, and olive-yellow clayey subsoil material is at the surface.

Because of the strong slope and the slow rate of infiltration, surface runoff is rapid. Erosion is a severe hazard. The available moisture capacity is moderately low. Tilth is poor. Consequently, this soil is not suitable for cultivation. It is suitable for permanent pasture or for pine forest. About 70 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit VIe–2; woodland group 4.)

Augusta Series

The Augusta series consists of deep, somewhat poorly drained soils that developed in old alluvium on low, nearly level stream terraces. These soils have a surface layer of light olive-brown to dark grayish-brown fine sandy loam over a thin layer of pale-yellow sandy loam. The subsoil is mottled, pale-yellow and light-gray sandy clay loam to sandy clay.

The slope range is 0 to 2 percent. The vegetation is chiefly sweetgum, pine, alder, blackgum, willow, and oak.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. The root zone is shallow. Permeability is slow in the subsoil.

Augusta soils occur with Chewacla and Wickham soils. They have more distinct horizons than Chewacla soils, which are on flood plains, and they are more poorly drained, grayer, and more mottled than Wickham soils.

In this county, Augusta soils occur as small areas, chiefly along the larger streams. The total acreage is less than 1 percent of the county. Of this, slightly more than half is in forest.

Augusta fine sandy loam (0 to 2 percent slopes) (Afs).—This is a deep, somewhat poorly drained soil on stream terraces. The major horizons are—

0 to 11 inches, light olive-brown fine sandy loam; commonly pale-yellow sandy loam in the lower few inches.
11 to 17 inches, mottled, pale-yellow and olive-yellow, friable sandy clay loam; weak, fine, subangular blocky structure.
17 to 34 inches, mottled, light-gray and yellow, firm sandy clay; moderate, medium, angular and subangular blocky structure.
34 to 44 inches +, mottled, white and pale-yellow, firm sandy clay; massive.

The color of the surface layer ranges from light olive brown to dark grayish brown. The texture of the subsoil ranges from sandy clay loam to sandy clay. The depth to mottling ranges from 8 to 14 inches.

Some small areas in which the surface layer is sandy loam and silt loam are mapped with this soil.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. The plow layer is in good tilth. Permeability is slow, the rate of infiltration is moderate, the available moisture capacity is high, and runoff is slow. The water table is at or near the surface most of the time.

Slow permeability and the high water table restrict the depth to which roots can grow and thereby limit the range of suitable crops. About 60 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IIIw–3; woodland group 8.)

Cecil Series

The Cecil series consists of deep, well-drained soils that formed on uplands in material weathered from gneiss, gneissoid schist, mica schist, and granite. Where they are not severely eroded, these soils have a surface layer of light yellowish-brown to brown coarse sandy loam and, at a depth of about 10 inches, a layer of yellowish-red to red sandy clay to clay. Severely eroded or very severely eroded Cecil soils have a surface layer of reddish-brown to red sandy clay loam.

The depth to bedrock ranges from 3 to 30 feet, but it is commonly less than 10 feet. The slope range is 2 to 25 percent, but a major part of the acreage has a slope of between 2 and 15 percent. The vegetation is chiefly white oak, post oak, red oak, blackjack oak, and hickory. Some blackgum, dogwood, sourwood, sweetgum, yellow-poplar, and shortleaf pine are also present.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Permeability is moderate.

Cecil soils occur with Appling, Madison, Lloyd, and Louisburg soils. They have a redder subsoil than Appling soils; are less micaceous, especially in the surface layer, than Madison soils; are less red in the subsoil than Lloyd soils; and are deeper and have more distinct horizons than Louisburg soils.

Large areas of Cecil soils are scattered throughout the county. The total acreage is about 50 percent of the county. Of this, about half is cultivated or is used as pasture. Shortleaf, loblolly, and Virginia pine grow in areas formerly cultivated but now abandoned.

Cecil coarse sandy loam, 2 to 6 percent slopes, eroded (CdB2).—This is a deep, well-drained soil on the uplands. It has a firm, red clayey subsoil. The major horizons are—

0 to 6 inches, yellowish-brown, friable coarse sandy loam.
6 to 10 inches, red, firm sandy clay loam; weak, subangular blocky structure.
10 to 30 inches, red, firm sandy clay; moderate, medium, angular blocky structure.
30 to 42 inches +, red sandy clay loam; weak, fine, subangular blocky structure.

The color of the surface layer ranges from light yellowish brown to brown. Numerous small, angular, quartz pebbles are scattered on the surface in a few places. The color of the subsoil ranges from yellowish red to red; the finer textured part of the subsoil is sandy clay to clay. In some profiles, the lower part of the subsoil is slightly mottled with yellow. Some areas are severely eroded. In these, the plow layer is yellowish-red sandy clay loam.

Some areas in which the surface layer is gravelly sandy loam and sandy loam are mapped with this soil.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. The plow layer is in good tilth. The root zone is deep. Permeability is moderate, the rate of infiltration is moderate, the available moisture capacity is moderately high, and surface runoff is medium.

This soil is suited to a wide range of crops. It responds to good management, especially to fertilization, and it is well suited to moderately intensive use. Most of the acreage has been cropped, chiefly to cotton and corn. About 80 percent is now cultivated or is used as pasture, and the rest is wooded or idle. Erosion is a slight to moderate hazard in cultivated areas. (Capability unit IIe–2; woodland group 5.)

Cecil coarse sandy loam, 2 to 6 percent slopes (CdB).—The surface layer of this soil is 6 to 8 inches thicker than that of Cecil coarse sandy loam, 2 to 6 percent slopes, eroded. The plow layer is commonly light yellowish brown but ranges to brown. The uppermost 3 to 6 inches of subsoil is yellowish-red to red sandy clay loam. Below this is red, firm sandy clay or clay.

Because of a thick root zone, good tilth, and a moderately high available moisture capacity, this soil is well suited to moderately intensive use. Under good management it is well suited to cultivation. Erosion is a slight to moderate hazard in cultivated areas. About 90 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IIe–2; woodland group 5.)

Cecil coarse sandy loam, 6 to 10 percent slopes, eroded (CdC2).—The surface layer of this soil is commonly yellowish brown but ranges from light yellowish brown to brown. The uppermost 3 to 6 inches of subsoil is yellowish-red to red sandy clay loam. Below this is red, firm sandy clay or clay.

This soil is generally in good tilth. It has a deep root zone. Drainage is favorable, and the available moisture capacity is moderately high. Because of the slope, surface runoff is medium in cultivated fields, and erosion is a moderate to severe hazard.

Some areas are severely eroded. In these, the plow layer is reddish-brown or yellowish-red sandy clay loam, infiltration is slow, and tilth is poor.

This soil can be cultivated if well managed. It is suited to a wide range of crops. About 35 percent of the acreage is cultivated or is used as pasture; the rest is wooded or is idle. (Capability unit IIIe–2; woodland group 5.)

Cecil coarse sandy loam, 10 to 15 percent slopes, eroded (CdD2).—The surface soil commonly is yellowish-brown coarse sandy loam. It ranges from light yellowish brown to brown in color. The uppermost few inches of subsoil is yellowish-red to red sandy clay loam. Below this is red, firm sandy clay or clay.

Unlike Cecil coarse sandy loam, 2 to 6 percent slopes, eroded, this soil is poorly suited to frequent cultivation. Because of the slope, surface runoff is moderately rapid in cultivated fields, and erosion is a severe hazard.

Some places are severely eroded. In these, the plow layer is reddish-brown or yellowish-red sandy clay loam, tilth is poor, and infiltration is slow.

In spite of the severe erosion hazard, this soil can be cropped occasionally if well managed. About 75 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IVe–1; woodland group 5.)

Cecil coarse sandy loam, 15 to 25 percent slopes, eroded (CdE2).—The surface layer of this soil commonly is yellowish brown but ranges from light yellowish brown to brown. The uppermost few inches of subsoil is yellowish-red to red sandy clay loam. The lower part is red, firm sandy clay or clay. Generally, the subsoil is 4 to 8 inches thinner than that of Cecil coarse sandy loam, 2 to 6 percent slopes, eroded. Because of the strong slope, surface runoff is rapid in cultivated fields and the erosion hazard is severe.

Some areas are severely eroded. In these, the plow layer is reddish-brown or yellowish-red sandy clay loam.

This soil is not suitable for cultivation, but it can support permanent pasture and pine forest. About 85 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit VIe–2; woodland group 5.)

Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded (CZB3).—This is the second most extensive soil in the county. It has a 5- to 7-inch plow layer of reddish-brown to yellowish-red sandy clay loam that is a mixture of remnants of the original surface layer and material from the upper part of the subsoil. In the most severely eroded places, the red clayey subsoil is at the surface.

Because of the slope and the slow rate of infiltration, surface runoff is medium to moderately rapid. Erosion is a moderate to severe hazard. Tilth is poor. Nevertheless, if well managed, this soil is suited to a wide range of crops. About 75 percent of the acreage is cultivated or is used as pasture; the rest is wooded or idle. (Capability unit IIIe–1; woodland group 4.)

Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded (CZC3).—This is the most extensive soil in the county. It has a 5- to 7-inch plow layer of reddish-brown to yellowish-red sandy clay loam that is a mixture of remnants of the original surface layer and material from the upper part of the subsoil. In the most severely eroded places, the red clayey subsoil is at the surface.

Because of the slope and the slow rate of infiltration, surface runoff is moderately rapid. The erosion hazard is severe in cultivated areas. Tilth is poor. Nevertheless, if well managed, this soil can be cultivated occasionally. It is well suited to permanent pasture and to pine forest. About 60 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IVe–1; woodland group 4.)

Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded (CZD3).—The plow layer of this soil is reddish-brown to yellowish-red sandy clay loam. It is from 5 to 7 inches thick, and it consists of remnants of the original surface layer mixed with material from the upper part of the subsoil. In the most severely eroded places, the red clayey subsoil is at the surface.

Because of the strong slope and the slow rate of infiltration, surface runoff is rapid and the erosion hazard is severe. The available moisture capacity is moderately low. Tilth is poor. Consequently, this soil is not suitable for cultivation. It is suitable for permanent pasture and for pine forest. About 60 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit VIe–2; woodland group 4.)

Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded (CZE3).—The plow layer of this soil is reddish-

brown to yellowish-red sandy clay loam. It is from 5 to 7 inches thick, and it consists of remnants of the original surface layer mixed with material from the upper part of the subsoil. In the most severely eroded places, the red clayey subsoil is at the surface.

Because of the strong slope and the slow rate of infiltration, surface runoff is very rapid and the erosion hazard is severe. The available moisture capacity is low. Tilth is poor. Consequently, this soil is not suited to cultivation. It is best suited to pine. About 80 percent of the acreage is in forest or is idle; the rest is cultivated or is used as pasture. (Capability unit VIIe–1; woodland group 4.)

Cecil-Gullied land complex, 6 to 10 percent slopes (CZC4).—The surface layer of this mapping unit is yellowish-red to red sandy clay loam. The original surface layer and some of the subsoil have been removed by erosion or by some other means. The remaining subsoil ranges in thickness from about 10 inches to as much as 30 inches, but in most places it is about 18 inches thick. Partly weathered rock is exposed in some small spots. Some shallow gullies and a few deep ones have formed (fig. 6).

Figure 6.—**Area of Cecil-Gullied land complex, 6 to 10 percent slopes. Careful management is required to establish vegetation on this complex.**

All of the acreage has been cultivated at some time, but now about 90 percent is in pine forest. The rest is idle. This complex is not suitable for cultivation, because of poor tilth, a slow rate of infiltration, a low available moisture capacity, rapid surface runoff, and a severe erosion hazard. If well managed, it can support permanent pasture. (Capability unit VIe–2; woodland group 4.)

Cecil-Gullied land complex, 10 to 15 percent slopes (CZD4).—The surface layer of this mapping unit is yellowish-red to red sandy clay loam. The original surface layer and some of the subsoil have been removed by erosion or by some other means. The remaining subsoil ranges in thickness from about 10 inches to as much as 30 inches, but in most places it is about 18 inches thick. Partly weathered rock is exposed in some small spots. Some shallow gullies and a few deep ones have formed.

All of the acreage has been row cropped at some time, but now, because of poor tilth, a slow rate of infiltration, a low available moisture capacity, rapid surface runoff, and a severe erosion hazard, this complex is not suited to clean-tilled crops. It is best suited to pine. About 95 percent of the acreage is in pine forest. The rest is idle. (Capability unit VIIe–1; woodland group 4.)

Chewacla Series

The Chewacla series consists of deep, somewhat poorly drained soils on first bottoms. These soils were derived from recent alluvium washed from Appling, Cecil, Madison, Lloyd, Louisburg, and other soils on the uplands. The surface layer is brown to reddish-brown silt loam. It overlies mottled gray silt loam or silty clay loam.

The slope range is 0 to 2 percent. The vegetation is chiefly sweetgum, water oak, white oak, willow, and elm.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is medium. Permeability is moderate to moderately slow, the rate of infiltration is moderate, and the available moisture capacity is high.

Chewacla soils occur with Wehadkee soils, which are on flood plains, and with Augusta soils, which are on adjacent low stream terraces. Chewacla soils are better drained than Wehadkee soils, and they have a browner surface layer; they have less distinct horizons than Augusta soils.

In this county, Chewacla soils occur as relatively small areas along both small and large streams. The total acreage is about 1.5 percent of the county. About 70 percent of this is in forest or is idle, and the rest is cultivated or is used as pasture.

Chewacla silt loam (0 to 2 percent slopes) (Csl).—This is a deep, somewhat poorly drained soil on first bottoms that are subject to frequent overflow. The major horizons are—

0 to 15 inches, brown to strong-brown silt loam; slightly sticky when wet.
15 to 36 inches +, mottled, gray, brownish-yellow, and yellowish-red silty clay loam; sticky when wet.

The color of the surface layer ranges from brown to reddish brown. The depth to mottling ranges from 10 to 18 inches, but it is ordinarily about 15 inches. The texture of the subsurface layer is silt loam or silty clay loam. In some places, there are layers of loamy sand and sandy loam at a depth of about 18 inches.

The plow layer is in good tilth. Natural fertility is low, and the organic-matter content is medium. Permeability is moderate to moderately slow, the rate of infiltration is moderate, the available moisture capacity is high, and surface runoff is slow. The water table is normally 10 to 30 inches below the surface.

This soil is suited to permanent pasture and, if drained, to a few cultivated crops, including corn and soybeans. It can be cultivated every year if adequately drained and otherwise well managed. About 70 percent of the acreage is in forest or is idle, and the rest is cultivated or is used as pasture. (Capability unit IIIw-2; woodland group 8.)

Colfax Series

The Colfax series consists of deep, somewhat poorly drained soils on uplands, chiefly around the head of drainageways, in depressions, and at the base of slopes. These soils formed in material weathered from light-colored granite and gneiss. The surface layer is light-gray to yellowish-brown sandy loam; it overlies yellow

and olive sandy clay loam to sandy clay that is mottled below a depth of about 12 inches.

The depth to bedrock ranges from 4 to 20 feet, but it is commonly less than 10 feet. The slope range is 2 to 10 percent, but a major part of the acreage has a slope of between 2 and 6 percent. The vegetation is chiefly sweetgum, pine, blackgum, white oak, red oak, and blackjack oak.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. Permeability is slow.

Colfax soils occur with Worsham, Appling, and Durham soils. Colfax soils are better drained than Worsham soils and are less gray in the subsoil; they are less well drained than Appling and Durham soils.

Small areas of Colfax soils are scattered throughout the county. The total acreage is less than 1 percent of the county. About 70 percent of this is in forest. Shortleaf and loblolly pine grow in areas formerly cultivated but now abandoned.

Colfax sandy loam, 2 to 6 percent slopes (CiB).—This is a deep, somewhat poorly drained soil that occurs around the head of drainageways, in depressions, and at the base of slopes. The major horizons are—

0 to 8 inches, light yellowish-brown to light olive-brown sandy loam.
8 to 26 inches, mottled sandy clay to sandy clay loam; the uppermost 10 inches is yellow and olive with a few red mottles in the lower part; the lower 8 inches is pale olive with many mottles of light gray, pale red, and yellowish brown.
26 to 36 inches +, mottled, yellowish-brown, pale-red, and olive-yellow, slightly plastic sandy clay loam; pockets of gray clay.

The color of the surface layer is light gray, light olive brown, light yellowish brown, or yellowish brown. The depth to mottling ranges from 10 to 20 inches. Mica flakes are common in some profiles.

Some areas in which the surface layer is coarse sandy loam and silt loam are mapped with this soil.

The reaction is very strongly acid. The plow layer is in good tilth. The root zone is shallow. Natural fertility is low, and the organic-matter content is low. Permeability is slow, the rate of infiltration is moderate, the available moisture capacity is high, and surface runoff is slow.

This soil is suited to only a limited number of crops. It responds fairly well to good management, especially to fertilization and to drainage. About 70 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IIIw–3; woodland group 6.)

Colfax sandy loam, 6 to 10 percent slopes, eroded (CiC2).—The 4- to 7-inch plow layer of this soil is light gray, light yellowish brown, light olive brown, or yellowish brown. The subsoil is yellow and olive sandy clay loam to sandy clay, mottled at a depth of about 10 to 12 inches. Because of the slope, surface runoff is medium in cultivated fields, and the erosion hazard is serious.

Because of the erosion hazard, a shallow root zone, slow permeability, a moderate available moisture capacity, and somewhat poor drainage, this soil is not suited to cultivation. It is best suited to permanent pasture and to pine forest. About 70 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit VIe–2; woodland group 6.)

Davidson Series

The Davidson series consists of deep, well-drained soils that formed on uplands in material weathered from diorite and other basic rocks. Where they are not severely eroded, these soils have a surface layer of dark reddish-brown loam. The color of the subsoil ranges from dark red to dusky red, and the texture from clay loam to clay. Severely eroded Davidson soils have a surface layer of dark-red to dusky-red clay.

The depth to bedrock ranges from 10 to 40 feet, but it is commonly less than 20 feet. The slope range is 2 to 15 percent, but a major part of the acreage has a slope of between 2 and 10 percent. The vegetation is chiefly white oak, post oak, red oak, hickory, and sassafras. Some shortleaf and loblolly pine are also present.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Permeability is moderate.

Davidson soils occur with Lloyd, Cecil, and Madison soils. Of these, Davidson soils have the darkest colored surface layer and the darkest red subsoil.

In this county, Davidson soils occur as small areas, chiefly in the north-central part. The total acreage is less than 1 percent of the county. Of this, about 30 percent is cultivated or is used as pasture. Shortleaf pine, loblolly pine, and Virginia pine grow in areas formerly cultivated but now abandoned.

Davidson loam, 2 to 6 percent slopes, eroded (DgB2).—This is a deep, well-drained soil on the uplands. It has a firm, dusky-red to dark-red subsoil. The major horizons are—

0 to 7 inches, dark reddish-brown, friable loam.
7 to 20 inches, dusky-red, firm clay loam; moderate, medium, subangular blocky structure.
20 to 42 inches +, dark-red, firm clay; moderate, medium, subangular blocky structure.

The color of the subsoil ranges from dark red to dusky red, and the texture from clay loam to clay. In a few places, partly weathered rock fragments are on the surface and scattered throughout the profile. Some areas are severely eroded. In these, the plow layer is dark-red to dusky-red clay.

Some areas of fine sandy loam and sandy clay loam are mapped with this soil.

The reaction is strongly acid to very strongly acid. The plow layer is in good tilth, except in severely eroded places. The root zone is deep. Natural fertility is low, and the organic-matter content is low. Permeability is moderate, the rate of infiltration is moderate, the available moisture capacity is moderately high, and surface runoff is medium.

This soil is suited to a wide range of crops. It responds to good management, especially to fertilization, and it is well suited to moderately intensive use. Most of the acreage has been cultivated. About 50 percent is now cultivated or is used as pasture, and the rest is wooded or is idle. Erosion is a slight to moderate hazard in cultivated areas. (Capability unit IIe–1; woodland group 2.)

Davidson loam, 6 to 10 percent slopes, eroded (DgC2).—The surface layer of this soil is dark reddish-brown loam. The subsoil is dark-red to dusky-red, firm clay loam to clay. It extends to a depth of 42 inches or more.

This soil is generally in good tilth. It has a thick root zone. Permeability is moderate, and the available moisture capacity is moderately high. Because of the slope, surface runoff is moderately rapid in cultivated areas, and erosion is a moderate to severe hazard.

Some areas are severely eroded. In these, the plow layer is clay, moisture infiltrates slowly, and tilth is poor.

If well managed, this soil is suitable for cultivation. It is suited to a wide range of crops. About 15 percent of the acreage is cultivated or is used as pasture; the rest is wooded or is idle. (Capability unit IIIe–1; woodland group 2.)

Davidson clay, 2 to 6 percent slopes, severely eroded (DpB3).—This soil is dusky-red to dark-red clay to a depth of more than 36 inches. Because of the slope and the slow rate of infiltration, surface runoff is medium to moderately rapid, and erosion is a moderate to severe hazard. Tilth is poor. Nevertheless, under good management, this soil is suited to a fairly wide range of crops. About half of the acreage is cultivated or is used as pasture, and the rest is wooded or is idle. (Capability unit IIIe–1; woodland group 4.)

Davidson clay, 6 to 10 percent slopes, severely eroded (DpC3).—This soil is dark-red to dusky-red clay to a depth of more than 36 inches. A few shallow gullies have formed in some places.

Because of the slope and the slow rate of infiltration, surface runoff is moderately rapid, and the erosion hazard is severe in cultivated areas. Tilth is poor. Nevertheless, if well managed, this soil can be cultivated occasionally. It is well suited to permanent pasture and to pine forest. About 45 percent of the acreage is cultivated or is used as pasture; the rest is wooded or is idle. (Capability unit IVe–1; woodland group 4.)

Davidson clay, 10 to 15 percent slopes, severely eroded (DpD3).—This soil is dark-red to dusky-red clay to a depth of more than 36 inches. A few shallow gullies have formed in some places.

Because of the strong slope and the slow rate of infiltration, surface runoff is rapid, and the erosion hazard is severe in cultivated areas. Tilth is poor. The available moisture capacity is moderate. Under good management, this soil can be cultivated occasionally. It is well suited to permanent pasture and to pine forest. About 80 percent is in forest or is idle; the rest is cultivated or is used as pasture. (Capability unit IVe–1; woodland group 4.)

Durham Series

The Durham series consists of deep, well-drained soils that formed on uplands in material weathered from granite and coarse-grained gneiss. The surface layer is olive-gray, pale-olive, light brownish-gray, or light yellowish-brown loamy coarse sand. It overlies a thin layer of light yellowish-brown coarse sandy loam. The subsoil is light olive-brown to light yellowish-brown sandy clay loam to sandy clay; it is commonly mottled at a depth of about 23 inches.

The depth to bedrock ranges from 5 to 15 feet, but it is commonly less than 10 feet. The slope range is 0 to 6 percent. The vegetation is hickory, dogwood, sweetgum, blackgum, loblolly pine, shortleaf pine, white oak, red oak, and blackjack oak.

The reaction is medium acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Permeability is moderate.

Durham soils occur with Appling, Louisburg, and Colfax soils. They are browner and less mottled in the subsoil than Appling soils; they have more distinct horizons than Louisburg soils and are deeper; and they are better drained than Colfax soils.

Small areas of Durham soils are scattered throughout this county. The larger of these areas are around Youth and Good Hope. The total acreage is about 1 percent of the county. Of this, about 60 percent is cultivated or is used as pasture.

Durham loamy coarse sand, 2 to 6 percent slopes (DjB).—This is a deep, well-drained soil on the uplands. The major horizons are—

0 to 13 inches, pale-olive, loose loamy coarse sand; the lower few inches is commonly light yellowish-brown coarse sandy loam.
13 to 23 inches, light olive-brown, friable sandy clay loam; moderate, medium, angular and subangular blocky structure; weak structure in uppermost few inches.
23 to 44 inches, mottled, firm sandy clay; moderate, medium, angular and subangular blocky structure.
44 to 48 inches +, mottled, olive-yellow, red, and light-gray, firm sandy clay loam; weak, subangular blocky structure.

The color of the surface layer ranges from pale olive and light brownish gray to light yellowish brown. Numerous small, angular, quartz pebbles are scattered on the surface in a few places.

Some small areas of sandy loam and coarse sandy loam are mapped with this soil.

The reaction is medium acid to very strongly acid. The plow layer is in good tilth. The root zone is deep. Natural fertility is low, and the organic-matter content is low. Permeability is moderate, the rate of infiltration is moderate, the available moisture capacity is moderately high, and surface runoff is medium.

This soil is suited to a wide range of crops. It responds to good management, especially to fertilization, and it is well suited to moderately intensive use. Most of the acreage has been cropped, chiefly to cotton and corn. At present, about 70 percent is cultivated or is used as pasture, and the rest is wooded or is idle. Erosion is a slight to moderate hazard in cultivated areas. (Capability unit IIe–2; woodland group 5.)

Durham loamy coarse sand, 0 to 2 percent slopes (DjA).—The surface layer of this soil is pale-olive to olive-gray loamy coarse sand. It is about 6 inches thicker than that of Durham loamy coarse sand, 2 to 6 percent slopes. The subsoil is light olive-brown to light yellowish-brown sandy clay loam. Mottled sandy clay is at a depth of about 25 to 30 inches.

Because of nearly level relief, good tilth, and a thick root zone, this soil is suited to intensive cultivation. During prolonged dry periods it is slightly droughty because of the thickness and texture of its surface layer. This soil can be row cropped almost continuously if a cover crop is grown occasionally to help in maintaining the supply of organic matter and in preserving good tilth. About 75 percent of the acreage is cultivated or is used as pasture, and the rest is wooded or is idle. (Capability unit IIs–1; woodland group 5.)

Gullied Land (Gul)

This land type consists of small areas of land from which most of the soil material has been removed. In more than half of the acreage, shallow and deep gullies (fig. 7)

form an intricate pattern. In many places these gullies have cut into the weathered mica schist, granite, or gneiss. The soil material remaining between the gullies is commonly sandy clay loam or clay loam, mainly from the lower part of the original subsoil. The slope range is 6 to 15 percent.

Figure 7.—**Area of Gullied land; terrace water discharged on unprotected soil formed this gully.**

The reaction is strongly acid to extremely acid. Tilth is poor. The organic-matter content and the supply of available plant nutrients are low. Permeability is slow, the rate of infiltration is slow, the available moisture capacity is low, and surface runoff is very rapid.

This land type is not suitable for cultivation. Establishing any type of vegetation on this land requires great care and skill. (Capability unit VIIe–4.)

Lloyd Series

The Lloyd series consists of deep, well-drained soils that formed on uplands in material weathered from acidic and basic rocks, including diorite, granite, gneiss, and schist. Where they are not severely eroded, these soils have a surface layer of reddish-brown to dark reddish-brown sandy loam or stony loam. The soil material at a depth of about 14 inches is reddish-brown to dark-red clay loam to clay. Severely eroded Lloyd soils have a surface layer of reddish-brown to dark-red clay loam.

The depth to bedrock ranges from 4 to 30 feet, but it is commonly less than 15 feet. The slope range is 2 to 45 percent, but a major part of the acreage has a slope of between 2 and 15 percent. The vegetation is chiefly white oak, post oak, red oak, hickory, and sassafras. Some blackgum, dogwood, and shortleaf pine are also present.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Permeability is moderate.

Lloyd soils occur with Davidson, Cecil, and Madison soils. They have a darker red subsoil than Cecil soils, which formed from acidic rocks; they have a more sandy surface layer and a lighter red subsoil than Davidson soils, which formed primarily from basic rocks; and they are much less micaceous throughout the profile than Madison soils.

Large areas of Lloyd soils are scattered throughout this county. The total acreage is about 8 percent of the county. About 30 percent of this is cultivated or is used as pasture. Shortleaf pine, loblolly pine, and Virginia pine grow in areas formerly cultivated but now abandoned.

Lloyd sandy loam, 2 to 6 percent slopes, eroded (LdB2).—This is a deep, well-drained soil on the uplands. The major horizons are—

0 to 7 inches, reddish-brown, friable sandy loam.
7 to 14 inches, reddish-brown, friable sandy clay loam; weak, subangular blocky structure.
14 to 30 inches, dark-red, firm silty clay; moderate, medium, angular and subangular blocky structure.
30 to 37 inches, red to dark-red, firm sandy clay loam; moderate, medium, subangular blocky structure.
37 to 63 inches +, red and brownish-yellow, friable sandy loam.

The surface layer ranges from dark reddish brown to reddish brown. The subsoil ranges from reddish brown to red and dark red. The texture is sandy clay loam or clay loam in the uppermost part and clay or clay loam in the lower part. Numerous small, angular, quartz pebbles are scattered on the surface in a few places. Some areas are severely eroded. In these, the plow layer is reddish-brown to dark-red clay loam.

Some areas of gravelly sandy loam and fine sandy loam are mapped with this soil.

The reaction is strongly acid to very strongly acid. The plow layer is in good tilth, except in severely eroded places. The root zone is deep. Natural fertility is low, and the organic-matter content is low. Permeability is moderate, the rate of infiltration is moderate, the available moisture capacity is moderately high, and surface runoff is medium.

This soil is suited to a wide range of crops. It responds to good management, especially to fertilization, and it is well suited to moderately intensive use. Most of the acreage has been cropped, chiefly to cotton and corn. About 50 percent is now cultivated or is used as pasture, and the rest is wooded or is idle. Erosion is a slight to moderate hazard in cultivated areas. (Capability unit IIe–1; woodland group 2.)

Lloyd sandy loam, 6 to 10 percent slopes, eroded (LdC2).—Except for stronger slopes, this soil is similar to Lloyd sandy loam, 2 to 6 percent slopes, eroded. The surface layer is reddish-brown to dark reddish-brown sandy loam to a depth of about 7 inches. The color of the subsoil ranges from reddish brown to red and dark red. The texture is sandy clay loam or clay loam in the uppermost few inches and clay or clay loam in the lower part.

Because of the slope, surface runoff is medium in cultivated fields and erosion is a moderate to severe hazard. Some areas are severely eroded. In these, the plow layer is clay loam, moisture infiltrates slowly, and tilth is poor.

In spite of the erosion hazard, this soil can be cultivated if well managed. It is suited to a wide range of crops, because of the generally good tilth, moderate perme-

ability, a thick root zone, and a moderately high available moisture capacity. About 15 percent of the acreage is cultivated or is used as pasture. The rest is wooded or is idle. (Capability unit IIIe–1; woodland group 2.)

Lloyd sandy loam, 10 to 15 percent slopes, eroded (LdD2).—The surface layer of this soil, to a depth of about 7 inches, is reddish-brown to dark reddish-brown sandy loam. The color of the subsoil ranges from red and dark red to reddish brown. The texture is sandy clay loam or clay loam in the uppermost part and clay or clay loam in the lower part.

Unlike Lloyd sandy loam, 2 to 6 percent slopes, eroded, this soil is poorly suited to frequent cultivation. Because of the slope, surface runoff is moderately rapid in cultivated fields and the erosion hazard is severe. Some places are severely eroded. In these, the plow layer is clay loam, tilth is poor, and infiltration is slow.

If well managed, this soil can be cropped occasionally. About 75 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IVe–1; woodland group 2.)

Lloyd sandy loam, 15 to 25 percent slopes, eroded (LdE2).—This soil has a surface layer of reddish-brown to dark reddish-brown sandy loam. The subsoil is red or dark-red clay or clay loam, except for the uppermost few inches, which commonly are reddish-brown sandy clay loam or clay loam. Generally, the subsoil is 6 to 10 inches thinner than that of Lloyd sandy loam, 2 to 6 percent slopes, eroded. Because of the strong slope, surface runoff is rapid in cultivated fields and the erosion hazard is severe. Some places are severely eroded. In these, the plow layer is clay loam, tilth is poor, and infiltration is slow.

This soil is not suitable for cultivation, but it is suitable for permanent pasture and pine forest. About 85 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit VIe–2; woodland group 2.)

Lloyd clay loam, 2 to 6 percent slopes, severely eroded (LeB3).—The 5- to 7-inch plow layer of this soil is reddish-brown to dark-red clay loam. It is a mixture of remnants of the original surface layer and material from the upper part of the subsoil. In the most severely eroded places, the red or dark-red clayey subsoil is at the surface.

Because of the relief and the slow rate of infiltration, surface runoff is medium to moderately rapid and erosion is a moderate to severe hazard. Tilth is poor. Nevertheless, if well managed, this soil is suited to a wide range of crops. About half of the acreage is cultivated or is used as pasture, and the rest is in forest or is idle. (Capability unit IIIe–1; woodland group 4.)

Lloyd clay loam, 6 to 10 percent slopes, severely eroded (LeC3).—The 5- to 7-inch surface layer of this soil is reddish-brown to dark-red clay loam. It consists of remnants of the original surface layer mixed with material from the upper part of the subsoil. In the most severely eroded places, the red or dark-red clayey subsoil is at the surface. A few shallow gullies have formed in some areas.

Because of the slope and the slow rate of infiltration, surface runoff is moderately rapid in cultivated areas and the erosion hazard is severe. Tilth is poor. Nevertheless, if well managed, this soil can be cultivated occasionally. It is well suited to permanent pasture and to pine forest. About 45 percent of the acreage is cultivated or is used as pasture, and the rest is wooded or is idle. (Capability unit IVe–1; woodland group 4.)

Lloyd clay loam, 10 to 15 percent slopes, severely eroded (LeD3).—The 5- to 7-inch surface layer of this soil is reddish-brown to dark-red clay loam. It consists of remnants of the original surface layer mixed with material from the upper part of the subsoil. In the most severely eroded places, the red or dark-red clayey subsoil is at the surface. A few shallow gullies have formed in some areas.

Because of the strong slope and the slow rate of infiltration, surface runoff is rapid and the erosion hazard is severe. The available moisture capacity is moderately low. Tilth is poor. Consequently, this soil is not suited to frequent cultivation. It is well suited to permanent pasture and to pine forest. About 80 percent of the acreage is wooded or is idle; the rest is cultivated or is used as pasture. (Capability unit IVe–1; woodland group 4.)

Lloyd clay loam, 15 to 25 percent slopes, severely eroded (LeE3).—The 5- to 7-inch surface layer of this soil is reddish-brown to dark-red clay loam. It consists of remnants of the original surface layer mixed with material from the upper part of the subsoil. In the most severely eroded areas, the red or dark-red clayey subsoil is at the surface. A few shallow gullies have formed in some places.

Because of the strong slope and the slow rate of infiltration, surface runoff is very rapid and the erosion hazard is severe. The available moisture capacity is low. Tilth is poor. Consequently, this soil is not suited to cultivation. It is suited to permanent pasture and to pine forest. About 75 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit VIe–2; woodland group 4.)

Lloyd clay loam, 25 to 45 percent slopes, severely eroded (LeF3).—The surface layer of this soil is reddish-brown to dark-red clay loam. It is a mixture of remnants of the original surface layer and material from the upper part of the subsoil. In the most severely eroded places, the surface layer is red or dark-red clayey material that was formerly subsoil. The subsoil is generally 5 to 10 inches thinner than that of Lloyd sandy loam, 2 to 6 percent slopes, eroded. A few shallow gullies have formed in some areas.

Because of the steep slope and the slow rate of infiltration, surface runoff is very rapid and the erosion hazard is very severe. The available moisture capacity is low. Tilth is poor. This soil is suited only to pine forest. All of the acreage is wooded. (Capability unit VIIe–1; woodland group 4.)

Lloyd stony loam, 10 to 25 percent slopes (LgE).—The surface layer of this soil is reddish-brown stony loam. The subsoil is red to dark-red clay to clay loam. In some places, the subsoil is stony. Only very light farm machinery and hand tools can be used, because of the strong slope and the stony surface.

This soil is not suited to cultivation or to permanent pasture. It is suited only to forest. All of the acreage is wooded. (Capability unit VIIe–2; woodland group 2.)

Lloyd-Gullied land complex, 6 to 10 percent slopes (LeC4).—The surface layer of this mapping unit is red or dark-red clay loam. Erosion has removed all of the original surface layer, which was reddish-brown sandy loam, and some of the subsoil. The remaining subsoil

ranges in thickness from about 12 inches to as much as 36 inches, but in most places it is about 20 inches thick. Partly weathered rock is exposed in some small spots. In most areas, some shallow gullies and a few deep ones have formed.

All of the acreage has been cultivated at some time, but now about 80 percent has reverted to pine forest. The rest is idle. This complex is not suitable for cultivation because of poor tilth, a slow rate of infiltration, a low available moisture capacity, rapid surface runoff, and a severe erosion hazard. If well managed, it can support permanent pasture. (Capability unit VIe–2; woodland group 4.)

Lloyd-Gullied land complex, 10 to 15 percent slopes (LeD4).—The surface layer of this mapping unit is red or dark-red clay loam. Erosion has removed all of the original surface layer, which was reddish-brown sandy loam, and some of the subsoil. The remaining subsoil ranges in thickness from about 12 inches to as much as 36 inches, but in most places it is about 20 inches thick. Partly weathered rock is exposed in some small spots. In most areas, some shallow gullies and a few deep ones have formed.

All of the acreage has been row cropped at some time, but now, because of poor tilth, a slow rate of infiltration, a low available moisture capacity, rapid surface runoff, and a severe erosion hazard, this complex is not suitable for cultivation. It is suited to pine forest, and if well managed it can support permanent pasture. About 80 percent of the acreage has reverted to pine forest. The rest is idle. (Capability unit VIe–2; woodland group 4.)

Local Alluvial Land (Lcm)

This land type consists of deep, well-drained, recent alluvial material washed from adjacent uplands. It occurs in depressions and at the head of drains. Texture and color vary within short distances.

A few areas in which the slope is as much as 6 percent are mapped with this land type, but in most areas the slope is between 0 and 3 percent.

The reaction is medium acid to strongly acid. Natural fertility is low, and the organic-matter content is low. The plow layer is in good tilth. The root zone is deep. Permeability is moderate, the rate of infiltration is moderate, the available moisture capacity is high, and surface runoff is medium.

Local alluvial land is suited to a wide range of crops. It responds to good management, especially to fertilization, and it is well suited to intensive use. Most of the acreage has been cropped, mainly to cotton and corn. About 80 percent is now cultivated or used as pasture, and the rest is wooded or is idle. Erosion is a slight hazard on the strongest slopes. Generally, special practices are not needed or, because of the small and irregularly shaped areas, are not feasible. (Capability unit I–1; woodland group 1).

Louisa Series

The Louisa series consists of somewhat excessively drained soils that formed on uplands, mainly in material weathered from mica schist and mica gneiss. These soils have a surface layer of grayish-brown, brown, or dark grayish-brown fine sandy loam. It overlies yellowish-brown to strong-brown fine sandy loam or gravelly fine sandy loam that contains much mica. The underlying mica schist and mica gneiss are commonly weathered to a depth of many feet.

The slope range is 15 to 45 percent. The vegetation is chiefly white oak, post oak, red oak, blackjack oak, hickory, dogwood, and sweetgum. Some loblolly and shortleaf pine are also present.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. Permeability is moderately rapid.

Louisa soils occur with Madison and Louisburg soils. They are shallower than Madison soils, and they have much less distinct horizons. They are more micaceous and less sandy than Louisburg soils.

Louisa soils occur as small areas in Walton County. These extend down the middle of the county from the northernmost part to the southern tip. The entire acreage, which is less than 1 percent of the county, is in forest.

Louisa fine sandy loam, 15 to 45 percent slopes (LjF).—This is a somewhat excessively drained soil on the uplands. The major horizons are—

0 to 6 inches, grayish-brown to brown fine sandy loam that is soft when dry.
6 to 33 inches +, yellowish-brown, soft fine sandy loam that has a greasy feel.

The surface layer is brown, grayish-brown, or dark grayish-brown fine sandy loam. Below this is yellowish-brown to strong-brown fine sandy loam or gravelly fine sandy loam.

Some areas in which the surface layer is gravelly fine sandy loam are mapped with this soil.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. The root zone is shallow. Permeability is moderately rapid, the rate of infiltration is moderate, and the available moisture capacity is low. Because of the strong slope, surface runoff is rapid and the erosion hazard is severe.

This soil is not suited to cultivation. It is best suited to pine. All of the acreage is in forest. (Capability unit VIIe–2; woodland group 7.)

Louisburg Series

The Louisburg series consists of shallow to moderately deep, somewhat excessively drained soils that formed on uplands in material weathered from granite and gneiss and, to a lesser extent, from quartzite. These soils have a surface layer of light-gray loamy coarse sand or stony loamy coarse sand that overlies light yellowish-brown loamy coarse sand.

The depth to bedrock ranges from 13 to 48 inches. The slope range is 2 to 45 percent, but a major part of the acreage has a slope of between 2 and 15 percent. The vegetation is predominantly post oak, white oak, red oak, blackjack oak, and hickory. Some blackgum, dogwood, and shortleaf pine are also present.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Permeability is rapid, and the available moisture capacity is low.

Louisburg soils occur with Durham, Cecil, and Appling soils. They have much less distinct horizons and they are shallower than any of these associated soils.

In this county, Louisburg soils occur as large areas,

mainly in the western part. The total acreage is about 8 percent of the county. Less than 20 percent of this is cultivated or is used as pasture.

Louisburg loamy coarse sand, 2 to 6 percent slopes (LCB).—This is a moderately deep to shallow, somewhat excessively drained soil on the uplands. The major horizons are—

0 to 7 inches, light-gray, loose loamy coarse sand.
7 to 33 inches, light yellowish-brown, loose loamy coarse sand.
33 inches +, light-colored, partly disintegrated parent rock.

The depth to bedrock ranges from 13 to 48 inches. In some places, a 6- to 10-inch layer of variegated yellowish-red, brownish-yellow, or yellow sandy clay loam or sandy clay is directly over bedrock, generally about 24 to 30 inches below the surface. There are few rock outcrops.

Some small areas of sandy loam and coarse sandy loam are mapped with this soil.

The reaction is strongly acid to very strongly acid. The plow layer is in good tilth. Natural fertility is low, and the organic-matter content is low. Permeability is rapid, the rate of infiltration is rapid, and surface runoff is medium.

This soil is suited to cultivation if well managed. A low available moisture capacity and a shallow root zone limit the range of suitable crops. Erosion is a hazard in row-cropped fields. Most of the acreage has been cultivated. At present, about 40 percent is cultivated or is used as pasture; the rest is wooded or is idle. (Capability unit IIIe–5; woodland group 5.)

Louisburg loamy coarse sand, 6 to 10 percent slopes (LCC).—Except for stronger slopes, this soil is similar to Louisburg loamy coarse sand, 2 to 6 percent slopes. The surface layer is light-gray, loose loamy coarse sand to a depth of about 7 inches. Below this is light yellowish-brown, loose loamy coarse sand that extends to a depth of about 30 inches. The depth to bedrock ranges from 1 to 4 feet.

Erosion is a severe hazard, but this soil can be cultivated occasionally if it is well managed. It is not suited to a wide range of crops, because of a shallow root zone, a low available moisture capacity, and somewhat excessive drainage. About 75 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit IVe–4; woodland group 5.)

Louisburg loamy coarse sand, 10 to 15 percent slopes (LCD).—This soil (fig. 8) is light-gray, loose loamy coarse sand to a depth of about 7 inches. Below this is light yellowish-brown loamy coarse sand. The depth to bedrock ranges from 1 to 4 feet.

Because of a shallow root zone and a low available moisture capacity, this soil is not suited to cultivation. Because of the strong slope, surface runoff is moderately rapid in cultivated fields and the erosion hazard is severe.

This soil is suited to permanent pasture and to pine forest. About 75 percent of the acreage is in forest or is idle, and the rest is cultivated or is used as pasture. (Capability unit VIe–3; woodland group 5.)

Louisburg loamy coarse sand, 15 to 25 percent slopes, eroded (LCE2).—Much stronger slopes and a few shallow gullies distinguish this soil from Louisburg loamy coarse sand, 2 to 6 percent slopes. The surface soil is light-gray loamy coarse sand. It overlies light yellowish-brown loamy coarse sand. The depth to bedrock ranges from 1 to 4 feet.

Because of a shallow root zone and a low available moisture capacity, this soil is not suited to cultivation or to permanent pasture. Because of the strong slope, surface runoff is rapid and the erosion hazard is severe in cultivated areas.

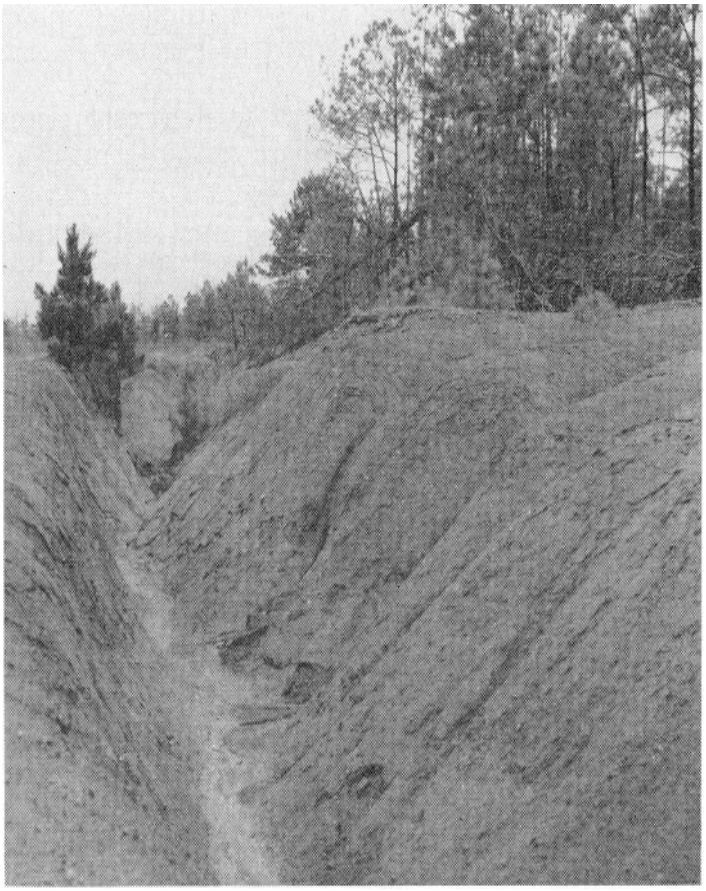

Figure 8.—**Profile of Louisburg loamy coarse sand, 10 to 15 percent slopes. The ruler is 30 inches long.**

This soil is suited to pine forest. About 85 percent of the acreage is in forest. The rest is used as pasture, or is cultivated, or is idle. (Capability unit VIIe–2; woodland group 5.)

Louisburg stony loamy coarse sand, 6 to 10 percent slopes (LDC).—This is a shallow soil. Its light-gray surface layer overlies light yellowish-brown loamy coarse sand that is stony in places. The depth to bedrock ranges from 1 to 4 feet.

Because its surface is stony, only very light farm machinery and hand tools can be used on this soil. It is not suitable for cultivation. It is suitable for forest and to a limited extent for permanent pasture. All of the acreage is in forest. (Capability unit VIs–1; woodland group 5.)

Louisburg stony loamy coarse sand, 10 to 25 percent slopes (LDE).—This soil is light-gray stony loamy coarse sand to a depth of about 7 inches. Below this is light yellowish-brown loamy coarse sand that is stony in places. The depth to bedrock ranges from 1 to 4 feet.

Because the slopes are strong and the surface is stony (fig. 9), only very light farm machinery and hand tools can be used. This soil is not suited to cultivated crops; it is best suited to forest. All of the acreage is in forest. (Capability unit VIIe–2; woodland group 5.)

Figure 9.—**An area of Louisburg stony loamy coarse sand, 10 to 25 percent slopes. The stony surface prohibits the use of machinery.**

Louisburg stony loamy coarse sand, 25 to 45 percent slopes (LDF).—The light-gray surface layer of this soil overlies light yellowish-brown loamy coarse sand that is stony in places. The depth to bedrock is 1 to 4 feet.

Because this soil is steep, stony, and shallow, only very light farm machinery and hand tools can be used. This soil is not suitable for cultivation or for permanent pasture. All of the acreage is in forest. (Capability unit VIIe–2; woodland group 5.)

Madison Series

The Madison series consists of deep, well-drained soils that formed on uplands in material weathered from quartz mica schist, mica schist, and granite gneiss. The only Madison soils mapped in Walton County are severely eroded. These have a surface layer of reddish-brown to yellowish-red sandy clay loam and a subsoil of red, dark reddish-brown, or dark-red clay loam to clay.

The depth to bedrock ranges from 4 to 30 feet. The slope range is 2 to 25 percent, but a major part of the acreage has a slope of between 2 and 15 percent. The vegetation is chiefly white oak, post oak, and red oak. Some hickory, dogwood, and shortleaf pine are also present.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Permeability is moderate.

Madison soils occur with Cecil, Lloyd, and Louisa soils. Madison soils have more mica throughout the profile, especially in the surface layer and in the subsoil, than Cecil and Lloyd soils. They have a distinct, red or dark-red subsoil, in contrast to the weakly developed, yellowish-brown to strong-brown subsoil of Louisa soils.

Small areas of Madison soils are scattered throughout the county. The total acreage is about 1 percent of the county. About 40 percent of this is cultivated or is used as pasture.

Madison sandy clay loam, 2 to 6 percent slopes, severely eroded (MIB3).—This is a deep, well-drained soil on the uplands. The major horizons are—

0 to 7 inches, reddish-brown, friable sandy clay loam.
7 to 22 inches, dark-red, firm silty clay; prominent mica flakes; moderate, medium, angular and subangular blocky structure.
22 to 30 inches, red, firm silty clay loam; it has a greasy feel because of the high content of mica; moderate, medium, subangular blocky structure.
30 to 77 inches +, red and dusky red, partly weathered mica schist.

The color of the surface layer ranges from reddish brown to yellowish red. The color of the subsoil is red, dark red, or dark reddish brown; and the texture ranges from clay loam to silty clay loam in the uppermost and lowest parts, and from silty clay to clay in the middle part. Numerous angular pebbles are scattered on the surface in places. Some areas are not severely eroded. In these, the plow layer is yellowish-brown to brown sandy loam.

Some spots that have a surface layer of gravelly fine sandy clay loam are mapped with this soil.

The reaction is strongly acid to very strongly acid. The plow layer is in poor tilth. The root zone is deep. Natural fertility is low, and the organic-matter content is low. Permeability is moderate, the rate of infiltration is slow, the available moisture capacity is moderately high, and surface runoff is medium to moderately rapid.

This soil responds to good management, especially to fertilization. If well managed, it is suited to a wide range of crops. Most of the acreage has been cropped, chiefly to cotton and corn. At present, about half is cultivated or is used as pasture, and the rest is wooded or is idle. Erosion is a moderate to severe hazard in cultivated areas. (Capability unit IIIe–1; woodland group 4.)

Madison sandy clay loam, 6 to 10 percent slopes, severely eroded (MIC3).—Except for stronger slopes, this soil is similar to Madison sandy clay loam, 2 to 6 percent slopes, severely eroded. The surface soil is reddish-brown to yellowish-red sandy clay loam. The color of the subsoil ranges from red and dark red to dark reddish brown. The texture is clay loam or silty clay loam in the uppermost and lowest parts and silty clay or clay in the middle part, but it is commonly red, firm silty clay with a high content of mica.

In some small areas, most of the original surface layer, which consists of yellowish-brown to brown sandy loam, still remains. The plow layer is in good tilth in these areas. In some places, a few shallow gullies have formed.

Because of the slope and a slow rate of infiltration, surface runoff is moderately rapid in cultivated fields and the erosion hazard is severe. Nevertheless, this soil can be row cropped occasionally if properly managed. It is well suited to permanent pasture and to pine forest. About half of the acreage is cultivated or is used as pasture, and the rest is wooded or is idle. (Capability unit IVe–1; woodland group 4.)

Madison sandy clay loam, 10 to 15 percent slopes, severely eroded (MID3).—This soil is similar to Madison sandy clay loam, 2 to 6 percent slopes, severely eroded, but it has stronger slopes. Its surface soil is reddish-brown to yellowish-red sandy clay loam. The subsoil commonly is red silty clay with a high content of mica, but the color ranges from red and dark red to dark reddish brown, and the texture is clay loam to silty clay loam in the uppermost and lowest parts and silty clay or clay in the middle part.

In some areas, most of the original surface layer, which consists of yellowish-brown to brown sandy loam, still

remains. The plow layer is in good tilth in these areas. A few shallow gullies have formed in some places.

Because of the strong slope and a slow rate of infiltration, surface runoff is rapid and the erosion hazard is severe. The available moisture capacity is moderately low. Tilth is generally poor. Consequently, this soil is not suited to cultivation. It is suited to permanent pasture and to pine forest. About 40 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit VIe–2; woodland group 4.)

Madison sandy clay loam, 15 to 25 percent slopes, severely eroded (MIE3).—This soil is generally 6 to 10 inches thinner than Madison sandy clay loam, 2 to 6 percent slopes, severely eroded. The uppermost 4 to 7 inches is reddish-brown to yellowish-red sandy clay loam. Below this is red clayey material that has a high content of mica.

In some areas most of the original surface layer, which consists of yellowish-brown to brown sandy loam, still remains. The plow layer is in good tilth in these areas. In some places, a few shallow gullies have formed.

Because of the strong slope and a slow rate of infiltration, surface runoff is very rapid and the erosion hazard is severe. Tilth is generally poor. The available moisture capacity is low. Consequently, this soil is not suited to cultivation. It is suited to pine forest. About 85 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit VIIe–1; woodland group 4.)

Rock Outcrop (Rok)

This land type consists of areas in which the bedrock is at the surface (fig. 10). It usually occurs with Louisburg soils. Soil material has accumulated in a few very shallow pockets. Poor-quality trees, grass, and other plants grow in cracks and crevices.

Figure 10.—**Area of Rock outcrop.**

This land type has no agricultural value. It can be developed to a limited extent for recreational use and to provide food and cover for wildlife. One area is being developed commercially as a source of crushed stone. The total acreage is less than 1 percent of the county. The largest areas are in the western part of the county, south of Loganville and west of Walnut Grove. (Capability unit VIIIs–1.)

Wehadkee Series

The Wehadkee series consists of deep, poorly drained soils on first bottoms. These soils were derived from recent alluvium. Their surface layer is mottled silt loam. It overlies mottled gray silty clay loam.

The slope range is 0 to 2 percent. The vegetation is chiefly sweetgum, willow, alder, elm, hickory, poplar, white oak, and water oak.

The reaction is medium acid to very strongly acid. Natural fertility is low, and the organic-matter content is medium. Permeability is slow.

Wehadkee soils occur with Chewacla and Augusta soils. Wehadkee soils are grayer and more poorly drained than Chewacla soils. They are also more poorly drained than Augusta soils.

In this county, Wehadkee soils occur as relatively small areas along the streams. The total acreage is less than 1 percent of the county. About 85 percent of this is in forest. The rest is used as pasture, or is cultivated, or is idle.

Wehadkee silt loam (0 to 2 percent slopes) (Wea).—This is a deep, poorly drained soil on first bottoms. The major horizons are—

0 to 21 inches, mottled, gray and brown silt loam; slightly sticky to sticky when wet.
21 to 36 inches, gray silty clay loam mottled with very dark brown and yellow; slightly plastic.
36 to 44 inches +, gray silty clay loam; slightly plastic.

The color of the surface layer ranges from mottled dark grayish brown to mottled gray. Layers of sand at variable depths are common in the subsurface horizon of some profiles.

A few areas of brown to yellowish-red silty clay loam are mapped with this soil.

The reaction is medium acid to very strongly acid. Natural fertility is low, and the organic-matter content is medium. Tilth is generally good, but in many places it is poor because the soil is wet. The water table is commonly near the surface but may be at a depth of as much as 24 inches. Permeability is slow, the rate of infiltration is slow, the available moisture capacity is high, and surface runoff is slow to very slow.

Because of frequent floods, the high water table, and poor drainage, this soil is not well suited to cultivation. Productivity is low, and the range of suitable crops is limited. This soil is suited to pasture and to hardwood forest. About 85 percent of the acreage is in forest. The rest is used as pasture, or is cultivated, or is idle. (Capability unit IVw–1; woodland group 8.)

Wickham Series

The Wickham series consists of deep, well-drained soils that developed in old alluvium on stream terraces. The alluvium is 2 to 10 feet thick. These soils have a surface layer of yellowish-brown to dark reddish-brown fine sandy loam, and a subsoil of red, yellowish-red, or strong-brown clay loam to sandy clay loam. Mottles are usually at a depth of about 29 inches.

The slope range is 2 to 6 percent. The vegetation is mainly white oak, post oak, and red oak. Some hickory, dogwood, shortleaf pine, and loblolly pine are also present.

The reaction is very strongly acid. Natural fertility is low and the organic-matter content is low. Permeability is moderate, and the available moisture capacity is moderately high.

Wickham soils occur with Augusta, Cecil, and Lloyd soils. Wickham soils are better drained than Augusta soils, and they have a browner surface layer. They are more friable than Cecil and Lloyd soils and are less red in the subsoil.

In this county, Wickham soils occur as small areas near the larger streams. The total acreage is less than 1 percent of the county. About 75 percent of this is cultivated or is used as pasture, and the rest is wooded or is idle.

Wickham fine sandy loam, 2 to 6 percent slopes, eroded (WgB2).—This is a deep, well-drained soil on stream terraces. The major horizons are—

0 to 6 inches, yellowish-brown fine sandy loam; slightly hard when dry.
6 to 29 inches, yellowish-red, friable sandy clay loam to clay loam; moderate, medium, angular and subangular blocky structure.
29 to 42 inches +, mottled, firm sandy clay loam; weak, medium, subangular blocky structure.

The color of the surface layer ranges from yellowish brown to dark reddish brown. The color of the subsoil is strong brown, yellowish red, or red. The depth to mottling ranges from 24 to 48 inches.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. The plow layer is in good tilth. The root zone is deep. Permeability is moderate, the rate of infiltration is moderate, the available moisture capacity is moderately high, and surface runoff is medium.

This soil responds to good management, especially to fertilization. It is well suited to moderately intensive use. The range of suitable crops is wide. Erosion is a slight to moderate hazard in cultivated areas. All of the acreage has been cultivated at some time. At present, about 75 percent is cultivated or is used as pasture, and the rest is wooded or is idle. (Capability unit IIe–1; woodland group 3.)

Worsham Series

The Worsham series consists of deep, poorly drained soils that developed in depressions, near the head of drains, and along the base of slopes. These soils formed in material weathered from light-colored granite and gneiss. The surface layer is mottled sandy loam, coarse sandy loam, or silt loam. The subsoil is mottled sandy clay loam to clay.

The depth to bedrock ranges from 3 to 8 feet. The slope range is 2 to 6 percent. The vegetation is chiefly sweetgum, blackgum, white oak, water oak, poplar, elm, and alder. Some shortleaf pine and some loblolly pine are also present.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. Permeability is slow.

Worsham soils occur with Colfax, Durham, and Appling soils. Worsham soils are more poorly drained and much grayer than any of these associated soils.

Small areas of Worsham soils are scattered throughout the county. The total acreage is less than 1 percent of the county. About 95 percent of this is in forest. The rest is used as pasture, or is cultivated, or is idle.

Worsham soils, 2 to 6 percent slopes (WmB).—These are deep, poorly drained soils that have a mottled, clayey subsoil. The major horizons of Worsham sandy loam are—

0 to 8 inches, sandy loam mottled with brown, olive, and yellow; slightly sticky when wet.
8 to 15 inches, mottled, light-gray and yellow sandy clay; sticky; weak, medium, subangular blocky structure.
15 to 36 inches +, mottled, light-gray and yellow clay; plastic; massive.

The texture of the surface layer ranges from sandy loam and coarse sandy loam to silt loam. The areas of silt loam are in depressions where recent deposits of alluvium are 6 to 10 inches thick. The texture of the subsoil ranges from sandy clay loam to clay.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. The plow layer is generally in poor tilth. The root zone is shallow. Permeability is slow, the rate of infiltration is moderate, the available moisture capacity is moderately high, and surface runoff is slow.

Worsham soils are not suited to cultivation. Their response to management is poor, and their range of suitable crops is narrow. If well managed, they can support pasture. About 95 percent of the acreage is in forest. The rest is cultivated, or is used as pasture, or is idle. (Capability unit Vw–1; woodland group 6.)

How to Use and Manage the Soils

This section explains the system of capability classification used by the Soil Conservation Service and gives the classification of the soils in Walton County according to that system. It discusses management requirements for growing cultivated crops and pasture and gives estimated yields of the common crops. It also discusses the probability of drought damage to a particular crop on a specific soil, and the suitability and limitations of the soils for growing wood products and for providing food and cover for wildlife. Finally, it interprets the soil characteristics that affect engineering uses.

Capability Groups of Soils

The capability classification is a grouping that shows, in a general way, how suitable soils are for most kinds of farming. It is a practical grouping based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment.

In this system all the kinds of soil are grouped at three levels, the capability class, the subclass, and the unit. The eight capability classes in the broadest grouping are designated by Roman numerals I through VIII. The higher the class designation, the more unfavorable the soils are. Soils in class I, for example, have few limitations, the widest range of use, and the least risk of damage when they are used. Those in class VIII are so rough, or

shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products.

The subclasses indicate major limitations within the classes. Within most of the classes there can be up to four subclasses. The subclass is indicated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* means that water in or on the soil will interfere with plant growth or cultivation (in some soils wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony, and *c*, used in only some parts of the country, indicates that the chief limitation is climate that is too cold or too dry.

Class I has no subclasses, because the soils in this class have few or no limitations. Class V can have, at the most, only subclasses *w*, *s*, and *c*, because the soils in it are not likely to erode but have other limitations that restrict their use largely to pasture, woodland, or wildlife.

Within the subclasses are the capability units, in which are grouped soils enough alike to be suited to the same crops and pasture plants, to require similar management and respond in like manner to management, and to have similar productivity. Capability units are generally identified by numbers assigned locally, for example, IIe–1 or IIIe–2.

Soils are placed in capability classes, subclasses, and units according to their permanent limitations but without considering possible but unlikely reclamation projects, or major and generally expensive changes in slope, in depth, or in other characteristics.

The eight classes, the subclasses, and the units in this county are—

Class I. Soils that have few limitations that restrict their use.
- Unit I–1.—Nearly level, deep, well-drained local alluvial land in depressions and at the head of drains.

Class II. Soils that have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- Subclass IIe. Soils moderately limited by risk of erosion if not protected.
  - Unit IIe–1.—Very gently sloping, moderately eroded soils that have a loamy surface layer and a subsoil of strong-brown to dusky-red sandy clay loam to clay.
  - Unit IIe–2.—Very gently sloping, slightly to moderately eroded soils that have a loamy to sandy surface layer and a subsoil of red to mottled red, yellowish-red, and olive-yellow sandy clay loam to clay.
- Subclass IIw. Soils moderately limited by excess water.
  - Unit IIw–2.—Moderately well drained alluvial land on first bottoms; subject to occasional overflow.
- Subclass IIs. Soils moderately limited by droughtiness.
  - Unit IIs–1.—Nearly level, deep, well-drained soils that have a thick, coarse-textured surface layer.

Class III. Soils that have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.
- Subclass IIIe. Soils severely limited by risk of erosion if they are tilled and not protected.
  - Unit IIIe–1.—Very gently sloping to gently sloping, moderately eroded to severely eroded soils that have a clayey or loamy surface layer and a subsoil of reddish sandy clay loam to clay.
  - Unit IIIe–2.—Very gently sloping to gently sloping, moderately eroded to severely eroded soils that have a surface layer of coarse sandy loam or sandy clay loam and a subsoil of sandy clay loam or clay.
  - Unit IIIe–5.—Very gently sloping, slightly eroded, shallow to moderately deep soils; weakly developed subsoil.
- Subclass IIIw. Soils severely limited by excess water.
  - Unit IIIw–2.—Somewhat poorly drained loamy soils on first bottoms; subject to overflow.
  - Unit IIIw–3.—Nearly level to very gently sloping, somewhat poorly drained soils on low stream terraces, around the head of drains, in depressions, and at the base of slopes.

Class IV. Soils that have very severe limitations that restrict the choice of plants, or that require very careful management, or both.
- Subclass IVe. Soils very severely limited by risk of erosion if not protected.
  - Unit IVe–1.—Gently sloping to sloping soils that have a surface layer of sandy loam to clay and a subsoil of sandy clay loam to clay.
  - Unit IVe–4.—Gently sloping, shallow to moderately deep, slightly eroded soils; weakly developed subsoil.
- Subclass IVw. Soils very severely limited by excess water.
  - Unit IVw–1.—Poorly drained soils on first bottoms; subject to frequent overflow.

Class V. Soils that are not likely to erode but that have other limitations that restrict their use to pasture, range, woodland, or food and cover for wildlife.
- Subclass Vw. Soils too wet for cultivation; drainage or protection not feasible.
  - Unit Vw–1.—Poorly drained soils in depressions, near the head of drains, or along the base of slopes.

Class VI. Soils that have severe limitations that make them generally unsuitable for cultivation and that limit their use largely to pasture, range, woodland, or food and cover for wildlife.
- Subclass VIe. Soils not suitable for cultivation and limited chiefly by the risk of erosion.
  - Unit VIe–2.—Gently to strongly sloping, well-drained to somewhat poorly drained, moderately eroded to very severely eroded soils on uplands.
  - Unit VIe–3.—Sloping, shallow to moderately deep soils; weakly developed subsoil.
- Subclass VIs. Soils generally unsuitable for cultivation and limited for other uses by low moisture capacity, stones, or other features.
  - Unit VIs–1.—Gently sloping, somewhat excessively drained, stony soils.

Class VII. Soils that have very severe limitations that make them unsuitable for cultivation and that restrict their use largely to grazing, woodland, or food and cover for wildlife.
Subclass VIIe. Soils very severely limited by risk of erosion if not protected.
Unit VIIe–1.—Severely eroded, strongly sloping to steep soils.
Unit VIIe–2.—Shallow to deep, strongly sloping to steep soils and shallow to deep, stony soils.
Unit VIIe–4.—Gullied land.
Class VIII. Soils and land types that have no agricultural value because of limitations that restrict their use to recreation, wildlife, water supply, or esthetic purposes.
Subclass VIIIs. Rock or soil material that supports little vegetation.
Unit VIIIs–1.—Rock outcrop.

Management by Capability Units [2]

In the following pages, each of the 21 capability units in Walton County is described, the soils in each are listed, and management for the group is suggested.

Capability unit I–1

This unit consists of Local alluvial land, a deep, well-drained land type that occurs in depressions and at the head of drains. The slope range is 0 to 3 percent. The plow layer varies in texture and consistence but is commonly friable or loose sandy loam or loam. The subsurface layer also varies in texture and consistence but is predominantly friable sandy loam. Plant roots can penetrate effectively to a depth of 36 inches or more. Generally, bedrock is at a depth of more than 5 feet.

The reaction is medium acid to strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is good. Permeability is moderate, the rate of infiltration is moderate, and the available moisture capacity is high.

The total acreage of Local alluvial land is slightly more than 1 percent of the county. About 75 percent of this is cultivated or is used as pasture. The rest is wooded or is idle.

Local alluvial land is suited to all locally grown crops, including grasses and legumes. It is especially well suited to home gardens and to truck crops. It can be cultivated intensively, responds well to fertilization, and is well suited to sprinkler irrigation. Crops are easy to establish and to maintain. Alfalfa can be grown successfully, but stands on the red soils on uplands usually have a longer life.

Suitable cropping systems are—

1. Truck crops, and a cover crop at least every other year.
2. Continuous high-yielding corn.

Occasionally, include an appropriate perennial in the cropping system, to help maintain the supply of organic matter and to help preserve good tilth. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, on or just below the surface during the season of crop production. To maintain high yields, apply lime every 3 to 5 years and a complete fertilizer regularly in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting.

Erosion is a slight hazard on the strongest slopes, but special erosion control measures are either not needed or not practical to develop or install, because the areas are small.

Capability unit IIe–1

This unit consists of deep, well-drained, moderately eroded soils on uplands and on stream terraces. The slope range is 2 to 6 percent. The uppermost 6 or 7 inches is friable to slightly hard loam to sandy loam. The subsoil is predominantly firm clay loam to clay, but in some places it is friable sandy clay loam. The color of the subsoil ranges from strong brown to dusky red. Plant roots can penetrate effectively to a depth of 36 inches or more. Generally, bedrock is at a depth of more than 6 feet. The soils are—

Davidson loam, 2 to 6 percent slopes, eroded.
Lloyd sandy loam, 2 to 6 percent slopes, eroded.
Wickham fine sandy loam, 2 to 6 percent slopes, eroded.

The reaction is strongly acid to very strongly acid. The supply of plant nutrients and the organic-matter content are low. Tilth is generally good. Permeability is moderate, the rate of infiltration is moderate, and the available moisture capacity is moderately high.

The total acreage of the soils in this unit is less than 2 percent of the county. Of this, about 70 percent is cultivated or is used as pasture.

These soils are suited to all locally grown crops, including grasses and legumes. They respond to fertilization, and they are well suited to sprinkler irrigation. Crops are easy to establish and to maintain. Clean-cultivated crops should not be grown continuously because of a slight to moderate erosion hazard.

Suitable cropping systems are—

1. First year, corn. Second year, cotton followed with a small grain. Third year, grain followed with annual lespedeza, or leave straw and stubble undisturbed on the surface.
2. First year, corn. Second year, cotton followed with a small grain. Third year through sixth year, alfalfa.

Occasionally include an appropriate perennial in the cropping system to help improve and maintain tilth. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, on or just below the surface during the season of crop production. To maintain high yields, lime the soils every 3 to 5 years and apply a complete fertilizer regularly in amounts indicated by soil tests. Alfalfa needs an annual application of boron.

Erosion is the chief hazard when these soils are cultivated. Contour tillage, terraces, vegetated outlets, stripcropping, and adequately fertilized close-growing crops in the rotation are effective means of controlling erosion.

Capability unit IIe–2

This unit consists of deep, well drained to moderately well drained, slightly eroded to moderately eroded soils on uplands and on stream terraces. The slope range is 2 to 6 percent. The surface layer is friable to loose fine sandy loam to loamy coarse sand. The subsoil is sandy clay loam to clay. Plant roots can penetrate effectively

[2] J. N. NASH, conservation agronomist, Soil Conservation Service, assisted with the preparation of this subsection.

to a depth of 36 inches or more. Bedrock is normally at a depth of more than 5 feet. The soils are—

Altavista fine sandy loam, 2 to 6 percent slopes.
Appling coarse sandy loam, 2 to 6 percent slopes, eroded.
Appling coarse sandy loam, 2 to 6 percent slopes.
Cecil coarse sandy loam, 2 to 6 percent slopes.
Cecil coarse sandy loam, 2 to 6 percent slopes, eroded.
Durham loamy coarse sand, 2 to 6 percent slopes.

The reaction is medium acid to extremely acid. Natural fertility is low, and the organic-matter content is low. Tilth is good. Permeability is moderate to moderately slow, the rate of infiltration is moderate, and the available moisture capacity is moderately high. These soils warm up more slowly in spring than the soils in capability unit IIe–1.

The total acreage of the soils in this unit is slightly less than 18 percent of the county. Of this, 60 percent is cultivated or is used as pasture. The rest is in forest or is idle.

These soils are well suited to most of the locally grown crops, including grasses and legumes (fig. 11). Generally,

Figure 11.—**One-year-old alfalfa hay on Cecil coarse sandy loam, 2 to 6 percent slopes, eroded. If well managed, this soil can yield more than 3.5 tons of alfalfa hay per acre.**

they are less well suited to wheat, alfalfa, pimiento peppers, barley, and peaches than the soils in capability unit IIe–1. They respond well to fertilization, and they are well suited to sprinkler irrigation. Suitable crops are easy to establish and to maintain. Clean-cultivated crops should not be grown continuously, because of a slight to moderate erosion hazard.

Suitable cropping systems are—

1. First year, corn or grain sorghum. Second year, truck crops or cotton followed with oats or rye drilled in stubble that has been mowed or disked. Third year, oats or rye overseeded with lespedeza and followed by oats or rye drilled in unplowed stubble. Fourth year, oats or rye followed by volunteer lespedeza.
2. First year, fully established Coastal bermudagrass for grazing or for hay. Second year, early corn; mow the stubble or allow it to be grazed late in summer, after the corn has been harvested.

To maintain good tilth and to preserve the organic-matter content, plant a close-growing cover crop or a soil-improving crop or a high-residue crop at least 1 year out of 2 or 3 years. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, on or just below the surface during the season of crop production. To maintain high yields, lime the soils every 3 to 5 years and apply a complete fertilizer annually in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting.

Erosion is the chief hazard when these soils are cultivated. Contour tillage, terraces, vegetated waterways, stripcropping, and adequately fertilized close-growing crops in the rotation are effective erosion control measures.

Capability unit IIw–2

This unit consists of Alluvial land, a deep, moderately well drained land type on flood plains. The slope range is 0 to 2 percent. The texture of the plow layer varies widely, but in most places it is friable silt loam or sandy loam. The subsoil is predominantly reddish-brown or yellowish-red, friable silt loam, sandy loam, or loamy sand, but both the texture and the color vary widely. Mottles are common, beginning at a depth of 24 inches. Plant roots can penetrate effectively to a depth of 30 to 36 inches.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is good. Permeability is moderate to rapid, the rate of infiltration is moderate to rapid, the available moisture capacity is high, and surface runoff is slow.

The total acreage of Alluvial land is slightly more than 1 percent of the county. About 20 percent of this is cultivated or is used as pasture. The rest is wooded or is idle.

Alluvial land is suited to most of the locally grown crops. It is especially well suited to permanent pasture, supplemental summer pasture, and truck crops. It is generally not suited to alfalfa, wheat, or barley. Row crops can be grown continuously if a cover crop is grown occasionally. This land type responds well to fertilization. It is well suited to sprinkler irrigation, and the nearby streams are a source of water for irrigation.

Suitable cropping systems are—

1. Continuous corn.
2. First year, silage or truck crops followed with oats or rye. Second year, oats or rye followed with grain sorghum.

To maintain the supply of organic matter and to preserve good tilth in fields that are row cropped intensively, grow a cover crop of winter legumes and turn it under in the spring. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, on or just below the surface during the season of crop production. To maintain high yields, apply lime every 3 to 5 years and a complete fertilizer annually in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting.

Overflow from streams is the main hazard. In most places, a simple system of ditches is needed to carry off excess surface water.

Capability unit IIs–1

This unit consists of deep, well-drained, slightly eroded soils on uplands. The slope range is 0 to 2 percent. The plow layer ranges in consistence from friable to loose.

The subsoil is friable sandy clay loam in the upper part and firm sandy clay loam to clay in the lower part. Mottling commonly begins at a depth of 17 to 23 inches. Plant roots can penetrate effectively to a depth of 36 inches or more. Bedrock is generally at a depth of more than 5 feet. The soils are—

Appling coarse sandy loam, 0 to 2 percent slopes.
Durham loamy coarse sand, 0 to 2 percent slopes.

The reaction is medium acid to extremely acid. The supply of plant nutrients and the organic-matter content are low. Tilth is good. Permeability is moderate to moderately slow, and the rate of infiltration is rapid.

The total acreage of the soils in this unit is less than 1 percent of the county. Of this, 75 percent is cultivated or is used as pasture. The rest is wooded or is idle.

These soils are well suited to melons and sweetpotatoes and to most other locally grown crops, including grasses and legumes. They are moderately well suited to wheat and to alfalfa. They respond well to fertilization, and they are well suited to sprinkler irrigation. During certain times of the year these soils tend to be droughty because of their thick sandy surface layer; consequently, crops are difficult to establish and shallow-rooted plants are difficult to maintain. Row crops can be grown almost continuously if a cover crop is grown occasionally.

Suitable cropping systems are—

1. First year, grain sorghum cultivated shallow and laid by early; follow with oats drilled in sorghum stubble that has been mowed, disked, and ripped. Second year, oats for hay or for grain. Third year, corn.
2. First year, corn or grain sorghum cultivated shallow and laid by early. Second year, corn or grain sorghum cultivated shallow and laid by early; follow with oats or rye drilled in stubble that has been mowed, disked, and ripped. Third year, oats or rye for grain, and late in winter, overseed the small grain with annual lespedeza. Fourth year, oats or rye followed with volunteer lespedeza; after the lespedeza has been harvested, leave the stubble unplowed throughout the winter.

Occasionally include an appropriate perennial in the cropping system to help maintain the supply of organic matter and to help preserve good tilth. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, on or just below the surface during the season of crop production. To maintain high yields, lime the soils every 3 to 5 years and apply a complete fertilizer regularly in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting. Alfalfa needs boron annually.

Other than contour tillage, special management practices generally are not needed.

Capability unit IIIe–1

This unit consists of well-drained, moderately eroded to severely eroded soils on uplands. The slope range is 2 to 10 percent. The uppermost 5 to 7 inches in the moderately eroded areas is friable coarse sandy loam, sandy loam, or loam. In the severely eroded areas, the plow layer is made up chiefly of subsoil material. The subsoil is reddish sandy clay loam to clay. Plant roots can penetrate effectively to a depth of 36 inches or more. Bedrock is generally at a depth of more than 6 feet. The soils are—

Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded.
Davidson loam, 6 to 10 percent slopes, eroded.
Davidson clay, 2 to 6 percent slopes, severely eroded.
Lloyd sandy loam, 6 to 10 percent slopes, eroded.
Lloyd clay loam, 2 to 6 percent slopes, severely eroded.
Madison sandy clay loam, 2 to 6 percent slopes, severely eroded.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is good, except in the severely eroded areas. Permeability is moderate, the rate of infiltration is moderate to slow, and the available moisture capacity is moderately high.

The total acreage of the soils in this unit is about 16 percent of the county. Of this, about 60 percent is cultivated or is used as pasture. The rest is wooded or is idle.

These soils are suited to all the locally grown crops, including grasses and legumes. Clean-cultivated crops should not be grown continuously, because erosion is a hazard in cultivated fields. Crops are more difficult to establish and maintain on these soils, especially on the severely eroded ones, than on the soils in capability unit IIe–1; also, tilth is poorer and yields are commonly lower. Tillage is somewhat difficult in the severely eroded soils; they can be cultivated only within a narrow range of moisture content without becoming clodded or puddled. The soils in this unit are suited to sprinkler irrigation.

Suitable cropping systems are—

1. First year, corn or grain sorghum. Second year, cotton or corn followed by a small grain and tall fescue. Third year, small grain for seed, followed by tall fescue. Fourth year, tall fescue for grazing, for hay, or for seed.
2. First year, cotton or corn followed by a small grain drilled in the mowed stubble. Second year, plant small grain, harvest grain for seed, and follow with alfalfa. Third year through sixth year, alfalfa.

To improve or maintain tilth and soil structure, especially in the severely eroded soils, include an appropriate perennial in the cropping system. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, on or just below the surface during the season of crop production. To maintain high yields, apply lime every 3 to 5 years and a complete fertilizer regularly in the amounts indicated by soil tests. Legumes need nitrogen only at the time of planting; alfalfa needs boron annually.

Erosion is the chief hazard. Contour tillage, terraces, vegetated outlets, stripcropping, and adequately fertilized close-growing crops in the rotation are effective erosion control measures.

Capability unit IIIe–2

This unit consists of well-drained, moderately eroded to severely eroded soils on uplands. The slope range is 2 to 10 percent. In the less eroded areas, the uppermost 5 to 7 inches is friable coarse sandy loam, and the uppermost 9 inches of subsoil is friable sandy clay loam that is free of mottles. In the severely eroded areas, the plow layer is friable sandy clay loam, and the subsoil is mottled, red,

yellowish-red, and olive-yellow sandy clay loam to clay. Plant roots can penetrate effectively to a depth of 36 inches or more. Bedrock generally is at a depth of more than 8 feet. The soils are—

Appling coarse sandy loam, 6 to 10 percent slopes, eroded.
Appling sandy clay loam, 2 to 6 percent slopes, severely eroded.
Cecil coarse sandy loam, 6 to 10 percent slopes, eroded.

The reaction is very strongly acid to extremely acid. Natural fertility is low, and the organic-matter content is low. The coarse sandy loams are in good tilth. The sandy clay loam cannot be tilled throughout a wide range of moisture content without adverse effects on structure and tilth. Soils of this capability unit warm up slowly in spring. Their rate of infiltration is moderate to slow, permeability is moderate to moderately slow, and their available moisture capacity is moderately high.

The soils in this unit make up about 8 percent of this county. About 50 percent of their acreage is cultivated or is used as pasture. The rest is wooded or is idle.

These soils are well suited to most of the locally grown crops, including grasses and legumes. They are less well suited to wheat, pimiento peppers, barley, alfalfa, and peaches than the soils in capability unit IIIe–1. Crops are more difficult to establish and maintain on Appling sandy clay loam, 2 to 6 percent slopes, severely eroded, than on the less eroded Appling soils in capability unit IIe–2. Also, its tilth is poorer and the yields are generally lower. Clean-tilled crops should not be grown continuously on soils of this unit, because erosion is a hazard in cultivated fields. These soils are suited to sprinkler irrigation.

Suitable cropping systems are—

1. First year, oats or rye, with lespedeza. Second year, oats or rye, with volunteer lespedeza. Third year, corn.
2. First year through third year, Coastal bermudagrass (fig. 12). Fourth year, corn.

***Figure 12.*—Two-year-old Coastal bermudagrass on Appling coarse sandy loam, 6 to 10 percent slopes, eroded, which is in capability unit IIIe–2. Mixed hardwoods and some loblolly pine are in the background.**

To improve or maintain tilth and soil structure, especially in the severely eroded soils, include an appropriate perennial in the cropping system. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, on or just below the surface during the season of crop production. To maintain high yields, apply lime every 3 to 5 years and a complete fertilizer regularly in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting.

Erosion is the main hazard when these soils are cultivated. Contour tillage, terraces, vegetated outlets, and adequately fertilized close-growing crops in the rotation are effective means of controlling erosion.

Capability unit IIIe–5

Louisburg loamy coarse sand, 2 to 6 percent slopes, is the only soil in this unit. It is a shallow to moderately deep, somewhat excessively drained soil on uplands. It consists of loose loamy coarse sand directly over bedrock, which is generally at a depth of less than 3 feet. Plant roots can penetrate effectively to a depth of only about 12 to 24 inches.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is good. This soil can be tilled throughout a wide range of moisture content without adverse effects on structure or tilth. Because of rapid infiltration and rapid permeability, this soil is less erodible than those in capability units IIIe–1 and IIIe–2, but it has a shallower root zone, and it is more droughty. The available moisture capacity is low, and surface runoff is medium.

The total acreage of this soil is less than 1 percent of the county. Of this, about 40 percent is cultivated or is used as pasture. The rest is wooded or is idle.

This soil is suited to grain sorghum, and it is moderately well suited to cotton, corn, oats, ryegrass, tall fescue common bermudagrass, Coastal bermudagrass, annual lespedeza, sericea lespedeza, and crimson clover. Generally, it is not suited to wheat, alfalfa, white clover, kudzu, or barley. Yields are low in the dry and even in the normal years. Clean-cultivated crops should not be grown continuously, because erosion is a hazard in cultivated fields.

Suitable cropping systems are—

1. First year, oats followed by annual lespedeza. Second year, oats, with volunteer annual lespedeza. Third year, corn.
2. First year through third year, Coastal bermudagrass. Fourth year, corn or grain sorghum.

Occasionally include an appropriate perennial in the cropping system to help maintain the supply of organic matter and to help preserve good tilth. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, at or just below the surface during the season of crop production. To obtain the best yields possible, lime the soil occasionally and add a complete fertilizer regularly. Legumes need nitrogen only at the time of planting.

Erosion is the chief hazard when this soil is cultivated. Contour tillage, terraces, vegetated outlets, stripcropping, and adequately fertilized close-growing crops in the rotation are effective erosion control measures.

Capability unit IIIw–2

This unit consists of deep, somewhat poorly drained soils on nearly level flood plains. The slope range is 0 to 2 percent. The surface layer ranges from slightly sticky silt loam to nonsticky loamy sand. The subsoil is predominantly mottled silt loam to loamy coarse sand, but in some places it is silty clay loam. Because of a high water table, plant roots can penetrate effectively to a depth of only about 24 inches. The soils are—

Alluvial land, moderately wet.
Chewacla silt loam.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is medium. Tilth is good, except in wet spots. Permeability is moderately slow to rapid, the rate of infiltration is moderate to rapid, the available moisture capacity is high, and surface runoff is slow.

The total acreage of this capability unit is slightly more than 5 percent of the county. About 80 percent of this is wooded or is idle.

These soils are suited to corn, grain sorghum, tall fescue, bermudagrass, annual lespedeza, and white clover. Generally, they are not suited to cotton, wheat, alfalfa, sericea lespedeza, kudzu, or crimson clover. Row crops can be grown continuously if flooding is controlled and if cover crops and crop residues are turned under. The soils in this unit respond well to fertilization. They are normally suited to sprinkler irrigation, and the nearby streams are a source of water for irrigation.

Suitable cropping systems are—

1. First year, corn or grain sorghum followed by tall fescue and white clover drilled in corn or sorghum stubble that has been disked and ripped. Second year and third year, tall fescue and white clover.
2. First year through third year, Coastal bermudagrass. Fourth year, corn.

Turn under cover crops and residues to help maintain the supply of organic matter and to help preserve good tilth in areas that are row cropped intensively. To maintain high yields, apply lime and a complete fertilizer. Legumes need nitrogen only at the time of planting.

Overflow from streams is the main hazard when these soils are cultivated. A system of ditches that will carry off excess surface water and improve internal drainage is needed.

Capability unit IIIw-3

This unit consists of deep, somewhat poorly drained, slightly eroded soils on low stream terraces, around the head of drainageways, in depressions, and at the base of slopes. The slope range is 0 to 6 percent. The surface layer is friable fine sandy loam to sandy loam, and the subsoil is mottled sandy clay loam to sandy clay. Plant roots can penetrate effectively to a depth of only about 22 to 30 inches. Bedrock is normally at a depth of more than 5 feet. The soils are—

Augusta fine sandy loam.
Colfax sandy loam, 2 to 6 percent slopes.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is good. Permeability is slow, the rate of infiltration is moderate, the available moisture capacity is high, and surface runoff is slow.

The soils in this unit make up less than 1 percent of the county. About 65 percent of their acreage is in forest.

These soils are suited to grain sorghum, tall fescue, and white clover, and moderately well suited to corn, bermudagrass, soybeans, annual lespedeza, and sericea lespedeza. Generally, they are not suited to wheat, alfalfa, cotton, oats, or kudzu. Clean-cultivated crops are likely to fail because of the wet nature of the soils. These soils respond fairly well to fertilization.

Suitable cropping systems are—

1. First year, grain sorghum or corn followed by tall fescue and white clover drilled in sorghum or corn stubble that has been ripped. Second year and third year, tall fescue and white clover.
2. Continuous soybeans, grain sorghum, or corn.

Turn under cover crops and include an appropriate perennial in the cropping system to help maintain the supply of organic matter and to help preserve good tilth in areas that are row cropped intensively. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, on or just below the surface during the season of crop production. To obtain the best yields possible, apply lime every 3 to 5 years and a complete fertilizer regularly in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting.

Excess surface water and somewhat poor internal drainage are the chief limitations. A system of ditches is needed to carry off the excess surface water.

Capability unit IVe–1

This unit consists of deep, well-drained, moderately eroded to severely eroded soils on uplands. The slope range is 6 to 15 percent. In the moderately eroded areas, the uppermost 5 to 7 inches is friable sandy loam or coarse sandy loam. In the severely eroded areas, the plow layer is made up chiefly of subsoil material. In most places the subsoil is reddish sandy clay loam to clay, but in some places it is mottled, red, yellowish red, or olive yellow. In a small area it consists of a 9-inch layer of yellowish-brown, friable sandy clay loam over mottled, red, yellowish-red, or olive-yellow material. Plant roots can penetrate effectively to a depth of 36 inches or more. Bedrock is generally at a depth of more than 5 feet. The soils are—

Appling coarse sandy loam, 10 to 15 percent slopes, eroded.
Appling sandy clay loam, 6 to 10 percent slopes, severely eroded.
Cecil coarse sandy loam, 10 to 15 percent slopes, eroded.
Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded.
Davidson clay, 6 to 10 percent slopes, severely eroded.
Davidson clay, 10 to 15 percent slopes, severely eroded.
Lloyd sandy loam, 10 to 15 percent slopes, eroded.
Lloyd clay loam, 6 to 10 percent slopes, severely eroded.
Lloyd clay loam, 10 to 15 percent slopes, severely eroded.
Madison sandy clay loam, 6 to 10 percent slopes, severely eroded.

The reaction is strongly acid to extremely acid. Natural fertility is low, and the organic-matter content is low. Tilth is good, except in the severely eroded areas. Permeability is moderate to moderately slow, the rate of infiltration is moderate to slow, the available moisture capacity is moderate to moderately high, and surface runoff is moderately rapid to rapid.

The soils in this unit make up slightly more than 24 percent of the county. About 35 percent of their acreage is cultivated or is used as pasture. The rest is wooded or is idle.

These soils are suited to most of the locally grown crops but are better suited to grasses and to legumes than to row crops. Row crops can be grown occasionally if perennial crops are grown the rest of the time, and if erosion is controlled. The Appling soils are poorly suited to alfalfa and to wheat. The severely eroded soils are somewhat difficult to till; they can be cultivated only within a narrow range of moisture content without becoming clodded or puddled.

Suitable cropping systems are—

1. First year, corn or cotton. Second year through sixth year, sericea lespedeza (fig. 13).

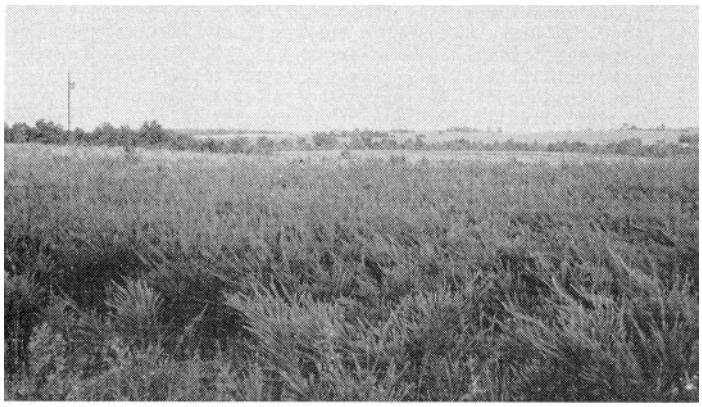

Figure 13.—**Sericea lespedeza on Appling sandy clay loam, 6 to 10 percent slopes, severely eroded.**

2. First year, corn. Second year, cotton; follow with tall fescue and clover drilled in ripped and disked stubble. Third year through fifth year, tall fescue and clover (fig. 14).

To improve and maintain tilth and soil structure, especially in the severely eroded soils, include an appropriate perennial in the cropping system. When an annual crop is grown, keep all residue on the surface between seasons of crop production and, whenever possible, at or just below the surface during the season of crop production. To maintain high yields, lime the soils every 3 to 5 years and add a complete fertilizer regularly in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting. Alfalfa needs boron.

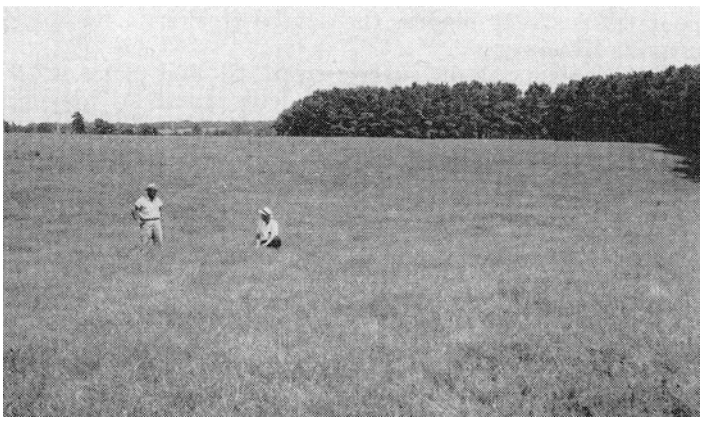

Figure 14.—**Well-managed pasture of tall fescue and reseeding crimson clover on Lloyd clay loam, 6 to 10 percent slopes, severely eroded. If well managed, this soil can yield 130 cow-acre-days of grazing. Good stand of loblolly pine is in right background.**

Erosion is the chief hazard when these soils are cultivated. Water-control practices therefore are needed. Contour tillage, terraces, vegetated outlets, stripcropping, and an adequately fertilized close-growing crop in the rotation are effective control measures.

Capability unit IVe–4

Louisburg loamy coarse sand, 6 to 10 percent slopes, is the only soil in this unit. It is a shallow to moderately deep, somewhat excessively drained soil on uplands. In most places, loamy coarse sand is directly over bedrock, which is generally at a depth of less than 3 feet. Plant roots can penetrate effectively to a depth of only about 12 to 24 inches.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is good. This soil has a shallower root zone than the soils in capability unit IVe–1, and it is more droughty. It can be tilled throughout a wide range of moisture content without adverse effects on structure or tilth. Permeability is rapid, the rate of infiltration is rapid, the available moisture capacity is low, and surface runoff is medium.

The total acreage of this soil is less than 1 percent of the county. Of this, about 75 percent is wooded.

This soil is moderately well suited to cotton, corn, annual lespedeza, oats, bahiagrass, bermudagrass, ryegrass, crimson clover, and sericea lespedeza. Alfalfa, tall fescue, white clover, and wheat are not suitable crops Clean-cultivated crops cannot be grown continuously, because erosion is a severe hazard. The low available moisture capacity limits yields of all crops.

Suitable cropping systems are—

1. First year, corn or cotton. Second year through fourth year, Coastal bermudagrass.
2. First year, grain sorghum or corn; follow with oats and bahiagrass drilled in sorghum or corn stubble that has been mowed, disked, and ripped. Second year, oats for grazing, for seed, or for silage; follow with bahiagrass. Third year and fourth year, bahiagrass for grazing, for seed, or for hay.

To help maintain the supply of organic matter and to help preserve good tilth, include an appropriate perennial in the cropping system. When annual crops are grown, keep all residue on the surface between seasons of crop production and, whenever possible, at or just below the surface during the season of crop production. To obtain the best possible yields, add lime to the soil every 3 to 5 years and a complete fertilizer regularly in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting.

Erosion is the chief hazard when this soil is cultivated. Water-control practices therefore are needed. Contour tillage, terraces, vegetated outlets, stripcropping, and adequately fertilized close-growing crops in the rotation are effective erosion control measures.

Capability unit IVw–1

This unit consists of deep, poorly drained soils on flood plains that are flooded frequently. The slope range is 0 to 2 percent. The surface layer is sticky silt loam to nonsticky loamy sand, and the subsoil is mottled silty clay loam to loamy coarse sand. Because the water table is commonly near the surface, plant roots can penetrate effectively to a depth of only about 8 inches. The soils are—

Alluvial land, wet.
Wehadkee silt loam.

The reaction is medium acid to very strongly acid. Natural fertility is low, and the organic-matter content is medium. Tilth is good in some areas and poor in others. Permeability is moderate to slow, the rate of infiltration is moderate to slow, the available moisture capacity is high, and surface runoff is slow to ponded. These soils are wetter than the soils in capability unit IIIw–2 and are flooded for longer periods.

The total acreage of this unit is about 3 percent of the county. Of this, about 90 percent is wooded.

Unless they are drained, the soils in this unit are not suited to locally grown crops other than annual lespedeza, white clover, tall fescue, dallisgrass, and vetch. They respond fairly well to fertilization. To obtain the best possible yields, apply lime every 3 to 5 years and a complete fertilizer regularly in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting.

Frequent flooding is the main hazard. To remove the excess surface water and improve internal drainage, a system of ditches is needed.

Capability unit Vw–1

Worsham soils, 2 to 6 percent slopes, make up this unit. These deep, poorly drained, slightly eroded soils occur in depressions, near the head of drains, or along the base of slopes. The 5- to 8-inch surface layer is mottled, slightly sticky sandy loam, coarse sandy loam, or silt loam. The subsoil is mottled sandy clay loam to clay. Because the water table is commonly near the surface, and because the subsoil is slowly permeable, plant roots can penetrate effectively to a depth of only about 8 inches.

The reaction is very strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is generally poor. The rate of infiltration is moderate, the available moisture capacity is moderately high, and surface runoff is slow.

Worsham soils make up less than 1 percent of the county. About 95 percent of their acreage is in forest.

These soils are too wet to be cultivated, but they can support pasture and forest. They are fairly well suited to annual lespedeza, tall fescue, white clover, and dallisgrass. They are wetter, they yield less, and they respond to management more poorly than the soils in capability unit IVw–1.

To obtain the best possible yields of pasture, apply lime every 3 to 5 years and add a complete fertilizer regularly in amounts indicated by soil tests. Legumes need nitrogen only at the time of planting.

Excess surface water and slow internal drainage are the main limitations. Artificial drainage is not feasible in many areas, because of the slow lateral movement of water and the need for close spacing of drains.

Capability unit VIe–2

This unit consists of deep, well-drained to somewhat poorly drained, moderately eroded to very severely eroded soils on uplands. The slope range is 6 to 25 percent. The uppermost 5 to 8 inches is friable sandy loam or coarse sandy loam in the moderately eroded soils, and friable clay loam or sandy clay loam in the severely eroded soils. The subsoil is predominantly yellowish-red to dark-red sandy clay loam to clay. It is mottled in some places. Generally, plant roots can penetrate effectively to a depth of 36 inches or more, and bedrock is at a depth of more than 6 feet. The soils are—

Appling sandy clay loam, 10 to 15 percent slopes, severely eroded.
Cecil coarse sandy loam, 15 to 25 percent slopes, eroded.
Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded.
Cecil-Gullied land complex, 6 to 10 percent slopes.
Colfax sandy loam, 6 to 10 percent slopes, eroded.
Lloyd clay loam, 15 to 25 percent slopes, severely eroded.
Lloyd sandy loam, 15 to 25 percent slopes, eroded.
Lloyd-Gullied land complex, 6 to 10 percent slopes.
Lloyd-Gullied land complex, 10 to 15 percent slopes.
Madison sandy clay loam, 10 to 15 percent slopes, severely eroded.

The reaction is strongly acid to extremely acid. Natural fertility is low, and the organic-matter content is low. Tilth is fair to good in the moderately eroded soils and poor in the severely eroded ones. The severely eroded soils can be tilled within only a narrow range of moisture content without becoming clodded or puddled. Permeability is moderate to slow, the rate of infiltration is moderate to slow, the available moisture capacity is moderately high to low, and surface runoff is medium to very rapid.

In Colfax sandy loam, 6 to 10 percent slopes, eroded, plant roots are restricted to the uppermost 22 to 30 inches because the soil is slowly permeable and somewhat poorly drained.

The total acreage of the soils in this unit is slightly more than 10 percent of the county. Much of this has been cultivated in the past, but about 70 percent is now wooded or is idle.

Because of a severe erosion hazard, these soils are better suited to pasture, hay, and forest than to cultivation. All of the locally grown grasses and legumes, except alfalfa, are suitable, but establishing a stand is difficult because of poor tilth, strong slopes, the severe erosion hazard, and heaving in winter.

To establish pasture or hay crops, till and plant on the contour. To obtain the best yields possible, apply a complete fertilizer every year and lime every 3 to 5 years. Renew pasture or hay stands in alternate strips to help check erosion. Control grazing to prevent the plant cover from weakening, and thereby minimize erosion.

Capability unit VIe–3

Louisburg loamy coarse sand, 10 to 15 percent slopes, is the only soil in this unit. It is a shallow to moderately deep, somewhat excessively drained soil on uplands. It consists of loose loamy coarse sand directly over bedrock, which is generally at a depth of less than 3 feet. Plant roots can penetrate effectively to a depth of only about 12 to 24 inches.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is

low. Tilth is good. This soil can be tilled throughout a wide range of moisture content without adverse effects on structure or tilth. It has a shallower root zone than the soils in capability unit VIe–2, and it is more droughty. Permeability is rapid, the rate of infiltration is rapid, the available moisture capacity is low, and surface runoff is moderately rapid.

The total acreage is less than 1 percent of the county. Of this, about 75 percent is wooded.

Because of strong slopes, a severe erosion hazard, and low available moisture capacity, this soil is unsuitable for cultivation, but it can support pasture, hay crops, and forest. It is moderately well suited to annual lespedeza, bermudagrass, sericea lespedeza, ryegrass, crimson clover, and bahiagrass. Grasses and legumes are difficult to establish and to maintain because of severe sheet erosion, a lack of available moisture, and a shallow root zone.

To establish pasture or hay crops, till and plant on the contour. To obtain the best yields possible, apply a complete fertilizer every year and lime every 3 to 5 years. Renew pasture or hay stands in alternate strips to help check erosion. In pastures, control grazing to avoid weakening the plant cover.

Capability unit VIs–1

Louisburg stony loamy coarse sand, 6 to 10 percent slopes, is the only soil in this unit. It is a shallow, somewhat excessively drained soil on uplands. Loose stony loamy coarse sand is directly over bedrock, which is generally at a depth of less than 3 feet. In most places, plant roots can penetrate effectively to a depth of only 12 to 24 inches.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is poor. Permeability is rapid, the rate of infiltration is rapid, the available moisture capacity is low, and surface runoff is medium.

This soil makes up less than 1 percent of the county. All of the acreage is wooded.

Because of the many stones on the surface and below the surface, this soil is not suitable for cultivation. It is best suited to trees, but it can be used to a limited extent as pasture. Grasses and legumes are difficult to establish and to maintain.

When this soil is used as pasture, apply a complete fertilizer every year and lime every 3 to 5 years. Control grazing to avoid weakening the plant cover.

Capability unit VIIe–1

This unit consists of deep, well-drained, severely eroded soils on uplands. The slope range is 10 to 45 percent. The uppermost 5 inches is yellowish-red to dark-red, friable sandy clay loam or clay loam. The subsoil is yellowish-red to dark-red sandy clay loam to clay. Plant roots can penetrate effectively to a depth of 36 inches or more. Bedrock is commonly at a depth of more than 6 feet. The soils are—

Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded.
Cecil-Gullied land complex, 10 to 15 percent slopes.
Lloyd clay loam, 25 to 45 percent slopes, severely eroded.
Madison sandy clay loam, 15 to 25 percent slopes, severely eroded.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is poor. Permeability is moderate, the rate of infiltration is slow, the available moisture capacity is low, and surface runoff is rapid to very rapid.

The total acreage of the soils in this unit is about 1 percent of the county. Much of this has been cultivated in the past, but about 85 percent is now wooded.

Because of strong slopes and a severe to very severe erosion hazard, these soils are unsuitable for cultivation. They are suitable for shortleaf and loblolly pine. To reduce the risk of erosion, perform all forestry operations on the contour, and run logging roads and firebreaks on the contour.

Capability unit VIIe–2

This unit consists of shallow to deep, slightly eroded to moderately eroded, well-drained to somewhat excessively drained soils on uplands. The slope range is 10 to 45 percent. The uppermost 6 to 8 inches ranges from friable loam to loose loamy coarse sand and is stony in places. The subsoil is variable, but in most places it is light yellowish-brown, loose loamy coarse sand or stony loamy coarse sand. In some places it is reddish-brown to dark-red sandy clay loam to clay, and in others it is fine sandy loam. Normally, plant roots can penetrate effectively to a depth of only 12 to 24 inches. Bedrock is generally at a depth of less than 3 feet. The soils are—

Lloyd stony loam, 10 to 25 percent slopes.
Louisa fine sandy loam, 15 to 45 percent slopes.
Louisburg loamy coarse sand, 15 to 25 percent slopes, eroded.
Louisburg stony loamy coarse sand, 10 to 25 percent slopes.
Louisburg stony loamy coarse sand, 25 to 45 percent slopes.

The reaction is strongly acid to very strongly acid. Natural fertility is low, and the organic-matter content is low. Tilth is poor in the stony soils and fairly good in the others. Permeability is moderate to rapid, the rate of infiltration is moderate to rapid, the available moisture capacity is moderate to low, and surface runoff is moderately rapid to rapid. These soils are more shallow, more droughty, or more stony than the soils in capability unit VIIe–1.

The total acreage of the soils in this unit is slightly more than 3 percent of the county. About 90 percent of this is in forest.

These soils are unsuitable for cultivation because of a severe to very severe erosion hazard, a stony surface layer, and strong slopes. They are suitable for shortleaf and loblolly pine. To reduce the risk of erosion, perform all forestry operations on the contour and run logging roads and firebreaks on the contour.

Capability unit VIIe–4

This unit consists of one land type, Gullied land. Erosion has removed most of the soil material, and in more than half of the acreage shallow and deep gullies form an intricate pattern.

The reaction is very strongly acid to extremely acid. Natural fertility is low, and the organic-matter content is low. Permeability is slow, the rate of infiltration is slow, the available moisture capacity is low, and surface runoff is very rapid.

The acreage of Gullied land in this county is small, and all of it is wooded or is idle.

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Because of the gullies, and because erosion is a severe hazard, Gullied land is unsuitable for cultivation and generally undesirable for pasture. It is suited to pine. Establishing any vegetation on this land type requires great care and skill.

Capability unit VIIIs-1

This unit consists of one land type, Rock outcrop, in which bedrock is at the surface. This land type makes up slightly less than 1 percent of the county. To a limited extent, it is a source of crushed stone, and it can be developed for recreational use, but it has no agricultural value.

Estimated Yields

Table 7 gives estimated yields of the principal crops grown in the county, under two levels of management. In the A columns are yields obtained under customary management. In the B columns are yields obtained under improved management or in experimental plots. The figures are based on recorded yields on individual farms; on yields obtained in long-term experiments; and on estimates made by agronomists who have had experience with the crops and with the soils.

Dashes in a column instead of a figure indicate that expectable yields are considered too low or that management requirements are too exacting to warrant growing the crop.

The estimates are for soils that have not been irrigated. Those soils listed as *drained* are assumed to be adequately drained and not subject to overflow. The estimates for soils subject to overflow do not reflect losses by flooding, because this hazard varies too greatly from place to place to justify estimating the loss.

Improved management (columns B) consists of the following practices: carefully choosing a crop and a cropping system; preparing a proper seedbed; seeding, at recommended rates and at proper times, inoculated legumes, high-yielding varieties, and hybrids; controlling weeds; draining excess water; providing vegetated waterways; tilling on the contour or terracing where needed; and applying lime, fertilizer, or both, where and when required.

The special practices needed to obtain yields equal to the estimates listed in table 7 are explained, by crop, in the following paragraphs.

Corn.—Management requirements for this crop vary because the soils differ in productivity and in moisture-supplying capacity.

On soils that have an estimated yield of 60 bushels or more per acre (as shown in table 7), the requirements are—

(1) 70 to 100 pounds of nitrogen (N), and 60 to 70 pounds each of phosphoric acid (P_2O_5) and potash (K_2O).
(2) 10,000 to 15,000 plants per acre.
(3) All crop residues or a winter cover crop returned to the soil.

On soils that have an estimated yield of 35 to 60 bushels per acre, the requirements are—

(1) 32 to 70 pounds of nitrogen (N), and 36 to 60 pounds each of phosphoric acid (P_2O_5) and potash (K_2O).
(2) 8,000 to 10,000 plants per acre.
(3) All crop residues or a winter cover crop returned to the soil.

On soils that have an estimated yield of 15 to 35 bushels per acre, the requirements are—

(1) 16 to 32 pounds of nitrogen (N), and 16 to 36 pounds each of phosphoric acid (P_2O_5) and potash (K_2O).
(2) 5,000 to 8,000 plants per acre.

Cotton.—Management requirements for this crop vary because the soils differ in productivity and in moisture-supplying capacity.

On soils that have an estimated yield of 500 pounds of cotton (lint) or more per acre, the requirements are—

(1) 60 to 96 pounds each of nitrogen (N), phosphoric acid (P_2O_5), and potash (K_2O).
(2) 24,000 to 30,000 plants per acre.
(3) Effective insect control programs.

On soils that have an estimated yield of 250 to 500 pounds per acre, the requirements are—

(1) 36 to 60 pounds each of nitrogen (N), phosphoric acid (P_2O_5), and potash (K_2O).
(2) 16,000 to 24,000 plants per acre.
(3) Effective insect control programs.

On soils that have an estimated yield of 150 to 250 pounds per acre, the requirements are—

(1) 12 to 36 pounds of nitrogen (N) and 16 to 36 pounds each of phosphoric acid (P_2O_5) and potash (K_2O).
(2) 12,000 to 18,000 plants per acre.
(3) Effective insect control programs.

Oats and wheat.—On soils that have an estimated yield of more than 50 bushels of oats per acre, or more than 25 bushels of wheat, the requirements are—

(1) 16 to 24 pounds of nitrogen (N) and 48 to 72 pounds each of phosphoric acid (P_2O_5) and potash (K_2O) applied at the time of planting.
(2) 32 to 64 pounds of nitrogen (N) applied late in winter.

On soils that have an estimated yield of 25 to 50 bushels of oats per acre, or 12 to 25 bushels of wheat, the requirements are—

(1) 8 to 16 pounds of nitrogen (N) and 24 to 48 pounds each of phosphoric acid (P_2O_5) and potash (K_2O) applied at the time of planting.
(2) 16 to 32 pounds of nitrogen (N) applied late in winter.

Sericea lespedeza.—On soils that have an estimated yield of 2 tons or more per acre, the requirements are—

(1) 24 to 36 pounds each of phosphoric acid (P_2O_5) and potash (K_2O), and 1 ton of lime applied at the time of seeding.
(2) 48 to 72 pounds each of phosphoric acid (P_2O_5) and potash (K_2O) applied annually.
(3) One ton of lime applied at least 1 year out of every 3 years, or lime applied as needed, in amounts indicated by soil tests.

On soils that have an estimated yield of 1 to 2 tons per acre, the requirements are—

(1) 24 to 36 pounds each of phosphoric acid (P_2O_5) and potash (K_2O), and 1 ton of lime applied at the time of seeding.
(2) 24 to 48 pounds each of phosphoric acid (P_2O_5) and potash (K_2O) applied annually.
(3) One ton of lime applied at least 1 year out of every 3 years, or lime applied as needed, in amounts indicated by soil tests.

Alfalfa.—Estimated yields are given only in the B column because this crop ordinarily is grown only on the most productive soils and under a high level of management. Soils on which alfalfa can be grown require—

(1) 15 to 30 pounds of nitrogen (N), 20 pounds of borax, 96 to 120 pounds each of phosphoric acid (P_2O_5) and potash

(K_2O), and 1 to 3 tons of lime applied at the time of seeding in amounts indicated by soil tests.
(2) 20 pounds of borax, 100 pounds of phosphoric acid (P_2O_5), and 200 pounds of potash (K_2O) applied annually.
(3) One ton of lime applied at least once every 3 years.
(4) Proper mowing (do not mow between September 15 and the date of the first frost).

Coastal bermudagrass for hay.—On soils that have an estimated yield of 3 tons or more per acre, the requirements are—

(1) 96 to 190 pounds of nitrogen (N) per acre.
(2) 48 to 95 pounds per acre each of phosphoric acid (P_2O_5) and potash (K_2O).
(3) One ton of lime every 3 years, or lime applied as needed, in amounts indicated by soil tests.

On soils that have an estimated yield of 1.5 to 3 tons per acre, the requirements are—

(1) 32 to 96 pounds of nitrogen (N) per acre.
(2) 16 to 48 pounds per acre each of phosphoric acid (P_2O_5) and potash (K_2O).
(3) One ton of lime every 3 years, or lime applied as needed, in amounts indicated by soil tests.

Soils that have an estimated yield of less than 1.5 tons per acre commonly receive little fertilizer or lime or other treatment after planting.

Coastal bermudagrass for pasture.—On soils that have an estimated acre yield of 200 to 270 cow-acre-days, the requirements are—

(1) 96 to 190 pounds of nitrogen (N) per acre.
(2) 48 to 95 pounds per acre each of phosphoric acid (P_2O_5) and potash (K_2O).
(3) One ton of lime every 3 years, or lime applied as needed, in amounts indicated by soil tests.
(4) Mowing to control excessive growth and weeds.

On soils that have an estimated acre yield of 100 to 200 cow-acre-days, the requirements are—

(1) 32 to 96 pounds of nitrogen (N) per acre.
(2) 16 to 48 pounds per acre each of phosphoric acid (P_2O_5) and potash (K_2O).
(3) One ton of lime every 3 years, or lime applied as needed, in amounts indicated by soil tests.
(4) Mowing to control excessive growth and weeds.

Soils that have an estimated acre yield of less than 100 cow-acre-days commonly receive little fertilizer or lime or other treatment after planting.

Tall fescue and white clover.—On soils that have an estimated acre yield of 100 to 200 cow-acre-days, the requirements are—

(1) 32 to 96 pounds of nitrogen (N) per acre.
(2) 48 to 96 pounds per acre each of phosphoric acid (P_2O_5) and potash (K_2O).
(3) One ton of lime every 3 years, or lime applied as needed, in amounts indicated by soil tests.
(4) Mowing to control excessive growth and weeds.

On soils that have an estimated acre yield of 60 to 100 cow-acre-days, the requirements are—

(1) 16 to 48 pounds per acre of nitrogen (N), and 24 to 48 pounds each of phosphoric acid (P_2O_5) and potash (K_2O).
(2) One ton of lime every 3 years, or lime applied as needed, in amounts indicated by soil tests.
(3) Mowing to control excessive growth and weeds.

Soils that have an estimated acre yield of less than 60 cow-acre-days commonly receive little fertilizer or lime or other treatment after planting.

Estimating Probability of Drought Damage

Successful crop production in Walton County requires an adequate supply of soil moisture throughout the growing season. Each crop requires a certain number of days to mature. Optimum growing conditions are essential during these days.

Lists A and B can be used with table 8 to determine the likelihood that drought will damage a particular crop on a specific soil during the growing season—April through October *(10)*.[3] Periods without sufficient moisture in the root zone for plant growth and development are considered to be droughty.

In list A, find the name of the crop and the average depth of its root zone. Then refer to list B, which gives the total capacity of the soils to hold moisture to a depth of 12 inches, 24 inches, and 36 inches. When you have learned the available moisture capacity of the soil to the depth to which the roots of the crop will penetrate, turn to table 8, which gives the chances of drought days, by months, for soils of 1-inch, 2-inch, 3-inch, 4-inch, and 5-inch capacities.

Suppose you want to know how likely it is that there will be dry days in July that will retard growth of garden vegetables on Cecil coarse sandy loam. In list A, you note that vegetables have most of their roots in the uppermost 12 inches of soil; therefore, in list B, you look under "12 inches" and find that Cecil coarse sandy loam holds approximately 2 inches of available moisture to a depth of 12 inches. Then turn to table 8, find the column headed "2 inches," and read under the "Probability" column the chances of days when drought will damage vegetables. The chances are 1 in 10 that there will be at least 21 drought days in July, 2 in 10 that there will be at least 17 drought days, 3 in 10 that there will be at least 14 drought days, and 5 in 10 that there will be at least 9 drought days.

Or, again, suppose you want to know the likelihood of dry days in June that will retard growth of corn on Durham loamy coarse sand. Corn has most of its roots in the uppermost 24 inches of the soil (list A), and to that depth (list B) Durham loamy coarse sand holds approximately 3 inches of moisture. By referring to the column headed "3 inches" in table 8, you can see that there will be at least 12 drought days for corn on this soil in 5 years out of 10. Thus, you weigh the cost of growing corn against the chance of damage and then decide whether supplemental irrigation should be considered.

LIST A: Normal Root Zone for Common Crops on Permeable Soils

Eighty percent of roots at depth not exceeding—

12 inches	*24 inches*	*36 inches*
Grasses (annual).	Cantaloups.	Alfalfa.
Most garden vegetables.	Clover (crimson).	Fruit trees.
Small grains.	Corn.	Kudzu.
	Cotton.	Lespedeza.
	Cowpeas.	Sericea (perennial).
	Grain sorghum.	
	Lima beans.	
	Tomatoes.	

[3] Italic numbers in parentheses refer to Literature Cited, page 68.

TABLE 7.—*Estimated average acre yields of*

[Yields in columns A are to be expected under common management, and those in columns B under improved

Soil	Capability unit	Corn [1]		Cotton (lint)	
		A	B	A	B
		Bu.	*Bu.*	*Lb.*	*Lb.*
Alluvial land	IIw–2	35	90	250	500
Alluvial land, moderately wet (drained)	IIIw–2	30	70		
Alluvial land, wet	IVw–1				
Altavista fine sandy loam, 2 to 6 percent slopes	IIe–2	30	70	375	550
Appling coarse sandy loam, 0 to 2 percent slopes	IIs–1	35	75	350	600
Appling coarse sandy loam, 2 to 6 percent slopes	IIe–2	35	75	350	600
Appling coarse sandy loam, 2 to 6 percent slopes, eroded	IIe–2	30	70	350	550
Appling coarse sandy loam, 6 to 10 percent slopes, eroded	IIIe–2	25	60	325	525
Appling coarse sandy loam, 10 to 15 percent slopes, eroded	IVe–1	20	50	300	500
Appling sandy clay loam, 2 to 6 percent slopes, severely eroded	IIIe–2	25	50	275	500
Appling sandy clay loam, 6 to 10 percent slopes, severely eroded	IVe–1	20	40	250	475
Appling sandy clay loam, 10 to 15 percent slopes, severely eroded	VIe–2				
Augusta fine sandy loam (drained)	IIIw–3	30	50		
Cecil coarse sandy loam, 2 to 6 percent slopes	IIe–2	30	70	400	700
Cecil coarse sandy loam, 2 to 6 percent slopes, eroded	IIe–2	30	70	400	700
Cecil coarse sandy loam, 6 to 10 percent slopes, eroded	IIIe–2	25	60	375	625
Cecil coarse sandy loam, 10 to 15 percent slopes, eroded	IVe–1	20	50	350	550
Cecil coarse sandy loam, 15 to 25 percent slopes, eroded	VIe–2				
Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded	IIIe–1	25	50	375	600
Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded	IVe–1	20	40	300	500
Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded	VIe–2				
Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded	VIIe–1				
Cecil-Gullied land complex, 6 to 10 percent slopes	VIe–2				
Cecil-Gullied land complex, 10 to 15 percent slopes	VIIe–1				
Chewacla silt loam (drained)	IIIw–2	40	85		
Colfax sandy loam, 2 to 6 percent slopes (drained)	IIIw–3	20	30		
Colfax sandy loam, 6 to 10 percent slopes, eroded	VIe–2				
Davidson loam, 2 to 6 percent slopes, eroded	IIe–1	30	60	375	600
Davidson loam, 6 to 10 percent slopes, eroded	IIIe–1	25	50	325	525
Davidson clay, 2 to 6 percent slopes, severely eroded	IIIe–1	25	50	300	500
Davidson clay, 6 to 10 percent slopes, severely eroded	IVe–1	20	40	275	475
Davidson clay, 10 to 15 percent slopes, severely eroded	IVe–1	15	30	250	450
Durham loamy coarse sand, 0 to 2 percent slopes	IIs–1	35	75	350	600
Durham loamy coarse sand, 2 to 6 percent slopes	IIe–2	35	75	350	600
Gullied land	VIIe–4				
Lloyd sandy loam, 2 to 6 percent slopes, eroded	IIe–1	30	70	400	700
Lloyd sandy loam, 6 to 10 percent slopes, eroded	IIIe–1	25	60	375	625
Lloyd sandy loam, 10 to 15 percent slopes, eroded	IVe–1	20	50	350	550
Lloyd sandy loam, 15 to 25 percent slopes, eroded	VIe–2				
Lloyd clay loam, 2 to 6 percent slopes, severely eroded	IIIe–1	25	40	375	600
Lloyd clay loam, 6 to 10 percent slopes, severely eroded	IVe–1	20	35	325	500
Lloyd clay loam, 10 to 15 percent slopes, severely eroded	IVe–1	15	30	250	400
Lloyd clay loam, 15 to 25 percent slopes, severely eroded	VIe–2				
Lloyd clay loam, 25 to 45 percent slopes, severely eroded	VIIe–1				
Lloyd stony loam, 10 to 25 percent slopes	VIIe–2				
Lloyd-Gullied land complex, 6 to 10 percent slopes	VIe–2				
Lloyd-Gullied land complex, 10 to 15 percent slopes	VIe–2				
Local alluvial land	I–1	35	80	400	700
Louisa fine sandy loam, 15 to 45 percent slopes	VIIe–2				
Louisburg loamy coarse sand, 2 to 6 percent slopes	IIIe–5	20	30	200	375
Louisburg loamy coarse sand, 6 to 10 percent slopes	IVe–4	15	25	150	325
Louisburg loamy coarse sand, 10 to 15 percent slopes	VIe–3				
Louisburg loamy coarse sand, 15 to 25 percent slopes, eroded	VIIe–2				
Louisburg stony loamy coarse sand, 6 to 10 percent slopes	VIs–1				
Louisburg stony loamy coarse sand, 10 to 25 percent slopes	VIIe–2				
Louisburg stony loamy coarse sand, 25 to 45 percent slopes	VIIe–2				
Madison sandy clay loam, 2 to 6 percent slopes, severely eroded	IIIe–1	25	50	375	600
Madison sandy clay loam, 6 to 10 percent slopes, severely eroded	IVe–1	20	40	300	500
Madison sandy clay loam, 10 to 15 percent slopes, severely eroded	VIe–2				
Madison sandy clay loam, 15 to 25 percent slopes, severely eroded	VIIe–1				
Rock outcrop	VIIIs–1				
Wehadkee silt loam	IVw–1				
Wickham fine sandy loam, 2 to 6 percent slopes, eroded	IIe–1	35	70	375	650
Worsham soils, 2 to 6 percent slopes	Vw–1				

[1] Based in part on "Some Effects of Irrigation, Nitrogen, and Plant Population on Corn," by F. C. BOSWELL, O. E. ANDERSON, and S. V. STACEY (*3*).

principal crops under two levels of management

management, not including irrigation. Absence of figure indicates crop is not commonly grown on the soil]

Oats		Wheat		Hay					Pasture			
				Sericea lespedeza		Alfalfa	Coastal bermudagrass		Coastal bermudagrass		Tall fescue and white clover [2]	
A	B	A	B	A	B	B	A	B	A	B	A	B
Bu.	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [3]	*Cow-acre-days* [3]	*Cow-acre-days* [3]	*Cow-acre-days* [3]
30	60			1. 5	3. 0		2. 0	4. 5	170	235	120	200
							1. 5	4. 0	135	195	120	200
											40	80
35	65			1. 0	2. 0		3. 0	5. 5	175	270	100	170
40	65	10	20	2. 0	3. 0	2. 0	3. 0	5. 5	175	270	100	170
40	65	15	25	2. 0	3. 0	2. 0	3. 0	5. 5	160	255	100	160
35	60	15	25	1. 5	2. 5	2. 0	2. 5	5. 0	150	240	85	140
30	55	10	20	1. 5	2. 5	1. 5	2. 0	4. 5	150	240	80	140
25	50	10	20	1. 5	2. 5	1. 5	1. 5	4. 0	130	200	75	120
30	50	15	20	1. 0	2. 0		2. 0	4. 5	130	200	70	110
25	45	10	20	1. 0	1. 5		1. 5	4. 0	130	200	65	100
				. 8	1. 3		1. 5	3. 0	100	170	60	90
				1. 0	1. 5		1. 5	3. 5	100	195	110	150
35	65	20	35	1. 5	3. 0	3. 8	3. 0	5. 5	160	255	110	150
35	65	20	35	1. 5	3. 0	3. 8	2. 5	5. 0	150	240	100	140
30	60	20	35	1. 5	3. 0	3. 8	2. 0	4. 5	150	240	100	140
25	55	15	30	1. 2	2. 5	3. 5	1. 5	4. 0	140	200	70	125
				1. 0	2. 0				120	180	60	100
30	50	20	30	1. 3	3. 0	3. 0	2. 0	4. 5	155	225	90	130
25	45	15	25	1. 0	2. 5	2. 5	1. 5	4. 0	155	225	90	130
				1. 0	2. 0	2. 0	1. 5	3. 0	120	190	75	120
				1. 0	2. 2				100	180	65	95
							1. 5	4. 0	120	190	120	200
				1. 0	1. 5		1. 5	3. 5	100	195	80	130
				1. 5	2. 0		1. 5	3. 0	100	170	70	120
30	60	25	40	2. 1	3. 2	4. 0	2. 5	5. 0	140	230	95	140
30	55	20	35	1. 8	3. 2	4. 0	2. 0	4. 5	140	230	95	140
30	55	20	35	1. 5	3. 0	3. 5	1. 5	4. 0	125	200	90	135
25	50	20	30	1. 5	2. 8	3. 5	1. 5	3. 5	125	200	90	135
20	45	15	25	1. 3	2. 5	3. 0	1. 5	3. 0	110	180	85	125
40	65	10	20	1. 5	2. 5	2. 0	3. 0	5. 5	175	270	100	170
40	65	15	25	1. 5	2. 5	2. 0	3. 0	5. 5	160	255	100	160
35	60	25	40	1. 8	3. 2	4. 0	2. 5	5. 0	160	255	100	140
30	55	20	35	1. 8	3. 2	4. 0	2. 0	4. 5	150	240	100	140
30	55	15	35	1. 5	3. 0	3. 5	1. 5	4. 0	140	200	90	125
				1. 3	2. 5				120	180	60	100
35	60	20	35	1. 5	3. 0	3. 5	2. 0	4. 5	155	225	90	130
30	55	20	30	1. 5	2. 8	3. 5	1. 5	4. 0	155	225	90	130
25	50	15	25	1. 3	2. 5	3. 0	1. 5	3. 0	120	190	75	120
				1. 0	2. 0				120	170	65	95
				1. 0	1. 5	2. 5			100	180	70	100
				. 7	1. 0				100	170	65	95
35	65	20	30	2. 0	3. 3	2. 5	3. 0	5. 5	175	270	120	200
25	40			1. 2	1. 5		1. 5	3. 5	140	200		
20	40			1. 0	1. 3		1. 5	3. 5	140	200		
				1. 0	1. 3		1. 5	3. 0	130	190		
30	55	15	30	1. 3	3. 0	3. 0	2. 0	4. 5	160	225	80	120
25	50	15	25	1. 3	2. 5	2. 5	1. 5	4. 0	155	225	70	110
				1. 0	2. 0	2. 0	1. 5	3. 0	120	190	65	100
											80	125
30	65	20	40	1. 5	3. 0	3. 5	2. 5	5. 0	160	255	85	130
											60	80

[2] Ladino clover may be substituted for white clover.

[3] Number of days in 1 year that 1 acre will provide grazing for 1 animal unit (1 cow, steer, or horse; or 7 sheep or goats) without injury to pasture.

LIST B: Total Available Moisture

Soils:	Approximate available moisture, in inches of water in soil from surface to a depth of— 12 inches	24 inches	36 inches
Alluvial land	2	3	4
Alluvial land, moderately wet	2	3	4
Alluvial land, wet	(1)	(1)	(1)
Altavista fine sandy loam	1	3	5
Appling coarse sandy loam	1	3	5
Appling sandy clay loam	2	3	5
Augusta fine sandy loam	2	4	5
Cecil coarse sandy loam	2	3	5
Cecil sandy clay loam	1	3	5
Chewacla silt loam	2	3	5
Colfax sandy loam	2	3	4
Davidson clay	1	3	4
Davidson loam	1	2	4
Durham loamy coarse sand	1	3	5
Gullied land	(1)	(1)	(1)
Lloyd clay loam	1	3	4
Lloyd sandy loam	2	3	5
Lloyd stony loam	(1)	(1)	(1)
Local alluvial land	2	3	4
Louisa fine sandy loam	1	2	(2)
Louisburg loamy coarse sand	1	2	(2)
Louisburg stony loamy coarse sand	(1)	(1)	(1)
Madison sandy clay loam	1	3	5
Rock outcrop	(1)	(1)	(1)
Wehadkee silt loam	(1)	(1)	(1)
Wickham fine sandy loam	2	3	5
Worsham soils	(1)	(1)	(1)

[1] Crops in list A are generally not grown on these soils and land types.
[2] Roots generally do not penetrate below a depth of 24 inches.

Use of the Soils for Woodland [4]

Walton County is located near the center of the Piedmont section of Georgia, which was originally covered by hardwoods or by mixed stands of pine and hardwoods. Before 1800, the uplands of the county were covered by oak, hickory, and some pine. Yellow-poplar, gum, oak, and maple grew on the bottom lands. By 1920, most of the original timber had been cut and the uplands had reseeded naturally to loblolly and shortleaf pine. The second-growth pine was cut heavily in the 1930's and 1940's. The better second-growth hardwoods on the bottom lands were also cut heavily during the same period.

Approximately half of the county's 211,200 acres is now in woodland. About 98 percent of the woodland is privately owned, and the rest is owned by commercial firms or by the State or Federal Government. On the uplands, the present forest cover consists mostly of loblolly pine and shortleaf pine, but undesirable hardwoods have invaded much of the area. Low-grade hardwoods make up the forest cover on the bottom lands.

Most of the soils in the county are well suited to trees. Lumber, veneer, and pulpwood are the principal wood products, and they are second to agricultural products in contributing to the economy of the county. Markets for the principal wood products are adequate, but a stable market for low-grade hardwoods is needed. Much progress has been made in selective cutting and in proper spacing of seedlings. More economical methods of removing underbrush on sloping soils are needed, so that pine can regenerate naturally.

Woodland suitability groups

Management of woodland can be planned more effectively if soils are grouped according to those characteristics that affect tree growth. The soils of Walton County have been placed in eight woodland suitability groups. Each group consists of soils that have about the same suitability for wood crops, require about the same management, and have about the same potential productivity.

Table 9 lists the eight woodland suitability groups, which are described later in the text. Also, table 9 gives the average site index for various kinds of trees and the hazards and limitations that affect management. The terms used in this table require explanation.

SITE INDEX.—The potential productivity of a soil for a specified kind of tree is expressed as a site index. A site index for a given soil is the height, in feet, that a specified kind of tree growing on that soil will reach in 50 years. The site index depends mainly on the capacity of the soil to provide moisture and growing space for tree roots. The site indexes in table 9 are averages for all the soils in the suitability group. The site index for any one soil in the group may be somewhat different from the average.

PLANT COMPETITION.—A site that has been disturbed by fire, cutting, grazing, or other means may be invaded

[4] N. E. SANDS, forester, Soil Conservation Service, assisted in the preparation of this subsection.

TABLE 8.—*Probabilities of drought days on soils of different moisture-storage capacities*

Month [1]	Probability	Minimum drought days if soil has a moisture-storage capacity of [2]— 1 inch	2 inches	3 inches	4 inches	5 inches
April	1 in 10	16	0	0	0	0
	2 in 10	14	0	0	0	0
	3 in 10	12	0	0	0	0
	5 in 10	9	0	0	0	0
May	1 in 10	25	24	22	14	7
	2 in 10	22	20	16	9	0
	3 in 10	20	17	11	5	0
	5 in 10	16	12	0	0	0
June	1 in 10	24	23	23	21	18
	2 in 10	21	20	19	17	14
	3 in 10	20	18	17	14	11
	5 in 10	17	14	12	10	6
July	1 in 10	22	21	19	19	18
	2 in 10	19	17	15	15	14
	3 in 10	17	14	12	12	11
	5 in 10	14	9	8	7	6
August	1 in 10	22	19	18	17	16
	2 in 10	18	15	13	12	11
	3 in 10	16	12	10	8	7
	5 in 10	13	7	0	0	0
September	1 in 10	24	22	21	20	18
	2 in 10	21	18	16	15	13
	3 in 10	18	15	12	11	8
	5 in 10	16	10	7	0	0
October	1 in 10	28	28	25	25	24
	2 in 10	24	22	19	18	16
	3 in 10	20	18	15	12	10
	5 in 10	15	11	8	0	0

[1] January, February, March, November, and December are not shown, because crops are rarely damaged by drought in these months.
[2] Moisture-storage capacity of soil is expressed as the inches of water that a soil can hold and make available to plants.

by undesirable brush, trees, or other plants. The invading growth competes with the desirable trees and hinders their establishment and growth.

Competition is *slight* if unwanted plants create no special problem. It is *moderate* if the invaders delay but do not prevent the establishment of a normal, fully stocked stand. Where competition is moderate, seedbed preparation is generally not needed and simple methods will keep undesirable plants from invading. Competition is *severe* if trees cannot regenerate naturally. Where competition is severe, the unwanted plants should be destroyed by controlled burning, spraying with chemicals, or girdling, and the site should be carefully prepared for planting.

EQUIPMENT LIMITATION.—Drainage, slope, stoniness, soil texture, or other soil characteristics or topographic features may restrict or prohibit the use of equipment for pruning, thinning, harvesting, or other operations. Different soils may require different kinds of equipment or special methods of operation or may be unsuitable for machine use at different seasons.

The limitation is *slight* if there are no restrictions on the type of equipment or on the time of year that the equipment can be used. It is *moderate* if slopes are moderately steep, if wetness in winter and early in spring restricts the use of heavy equipment, or if tree roots are damaged to some extent by the use of equipment. The limitation is *severe* if many types of equipment cannot be used, if the period during which equipment cannot be used is more than 3 months in a year, and if the use of equipment severely damages tree roots and the structure and stability of the soil. The limitation is severe on moderately steep and steep, stony and rocky soils. It is also severe, in winter or early in spring, on wet bottom lands and on low terraces.

SEEDLING MORTALITY.—Even when healthy seedlings of suitable species are correctly planted or occur naturally in adequate numbers, some will not survive if characteristics of the soil are unfavorable.

Mortality is *slight* if not more than 25 percent of the planted seedlings die, or if trees ordinarily regenerate naturally in places where there are enough seeds. It is *moderate* if 25 to 50 percent of the seedlings die, or if trees do not regenerate naturally in numbers needed for adequate restocking. In some places, replanting to fill open spaces is necessary. Mortality is *severe*, if more than 50 percent of the planted seedlings die, or if trees do not ordinarily reseed naturally in places where there are enough seeds. If mortality is severe, it is necessary to plant seedlings where seeds do not grow, to prepare special seedbeds, and to use superior planting techniques.

WINDTHROW HAZARD.—Soil characteristics affect the development of tree roots; the depth of the roots decides the resistance of the trees to the force of the wind. Root development may be prevented by a high water table or by an impermeable layer. Protection offered by surrounding trees also affects the windthrow hazard. Knowing the degree of this hazard is important when choosing trees for planting and when planning release cuttings or harvest cuttings.

The windthrow hazard is *slight* if roots hold the tree firmly against a normal wind; individual trees are likely to remain standing if protective trees on all sides are removed. The hazard is *moderate* if roots hold the tree firmly except when the soil is excessively wet and the wind velocity very high. It is *severe* if roots are not deep enough to give adequate stability; individual trees are likely to be blown over if the trees on all sides are removed.

EROSION HAZARD.—Woodland can be protected from erosion by growing suitable kinds of trees, by adjusting the rotation age and cutting cycles, by using special techniques in management, and by carefully constructing and maintaining roads, trails, and landings.

The erosion hazard is rated according to the risk of erosion on well-managed woodland that is not protected by special practices. It is *slight* where only a small loss of soil is expected, generally on 0 to 2 percent slopes where runoff is slow or very slow. It is *moderate* where the vegetation is not adequate for protection and a moderate loss of soil would be expected if runoff were not controlled. It is *severe* where slopes are steep, runoff is rapid, and infiltration and permeability are slow.

On the following pages the eight woodland suitability groups of Walton County are described, and the soils in each group are listed.

Gullied land (Gul) and Rock outcrop (Rok) are not included in a woodland suitability group, because trees suitable for commercial use do not normally grow on these land types.

WOODLAND SUITABILITY GROUP 1

This group consists of deep, moderately well drained to well drained soils on flood plains, in depressions, and at the head of drains. The soils are—

Alm	Alluvial land.
Lcm	Local alluvial land.

The average site index is 102 for loblolly pine, 86 for shortleaf pine, 90 for sweetgum, and 80 for red oak and white oak.

Competition from cull trees, underbrush, and vines is the only soil-related management problem of any significance. The competition is severe after the overstory has been removed. Clearing, harrowing, furrowing, burning, poisoning, and planting are usually necessary to control the undesirable plants.

The equipment limitation is moderate because the soils are excessively wet for short periods during winter.

WOODLAND SUITABILITY GROUP 2

This group consists of deep, well-drained, moderately permeable soils on uplands. The slope range is 2 to 25 percent, but most of the acreage has a slope of less than 10 percent. The soils are—

DgB2	Davidson loam, 2 to 6 percent slopes, eroded.
DgC2	Davidson loam, 6 to 10 percent slopes, eroded.
LdB2	Lloyd sandy loam, 2 to 6 percent slopes, eroded.
LdC2	Lloyd sandy loam, 6 to 10 percent slopes, eroded.
LdD2	Lloyd sandy loam, 10 to 15 percent slopes, eroded.
LdE2	Lloyd sandy loam, 15 to 25 percent slopes, eroded.
LgE	Lloyd stony loam, 10 to 25 percent slopes.

The average site index is 82 for loblolly pine and 71 for shortleaf pine.

Plant competition is moderate on the gentle slopes and severe on many of the steep ones. Eliminating or controlling undesirable plants, though not always necessary helps to improve growing conditions.

There is no apparent limitation on the use of equipment; logging operations can be carried out throughout the year. A large percentage of seedlings can be expected to survive following planting or natural reseeding. The windthrow hazard is slight. Because the erosion hazard is

TABLE 9.— *Woodland suitability groups, average productivity, and major hazards and limitations affecting management*

Woodland suitability group	Average productivity			Hazards and limitations
	Commercial trees [1]	Site index [2]	Annual growth [3]	
			Cords per acre	
Group 1: Deep, moderately well drained to well drained soils. AIm, Lcm.	Loblolly pine	102	1. 8	Plant competition, severe. Equipment limitation, moderate.
	Shortleaf pine	86	1. 7	
	Sweetgum	90	1. 7	
	Red oak	80	. 7	
	White oak	80	. 7	
Group 2: Deep, well-drained, moderately permeable soils on uplands. DgB2, DgC2, LdB2, LdC2, LdD2, LdE2, LgE.	Loblolly pine	82	1. 3	Plant competition, moderate on moderate slopes; severe on slopes of more than 12 percent. Erosion hazard, moderate to severe.
	Shortleaf pine	71	1. 4	
Group 3: Deep, well drained to moderately well drained soils on stream terraces; permeability is moderate to moderately slow. AkB, WgB2.	Loblolly pine	75	1. 2	Seedling mortality, moderate. Erosion hazard, slight to moderate.
	Shortleaf pine	68	1. 4	
Group 4: Severely eroded to very severely eroded, deep, well-drained soils on uplands; sandy clay loam to clay surface layer. AnB3, AnC3, AnD3, CZB3, CZC3, CZD3, CZE3, CZC4, CZD4, DpB3, DpC3, DpD3, LeB3, LeC3, LeD3, LeE3, LeF3, LeC4, LeD4, MIB3, MIC3, MID3, MIE3.	Loblolly pine	74	1. 2	Equipment limitation, moderate to severe. Seedling mortality, moderate. Erosion hazard, moderate to very severe.
	Shortleaf pine	66	1. 3	
Group 5: Well-drained to somewhat excessively drained soils on uplands; depth to bedrock ranges from a few inches to many feet; permeability is moderately slow to rapid. AxA, AxB, AxB2, AxC2, AxD2, CdB, CdB2, CdC2, CdD2, CdE2, DiA, DjB, LCB, LCC, LCD, LCE2, LDC, LDE, LDF.	Loblolly pine	78	1. 3	Seedling mortality, slight to moderate. Drought hazard, slight to moderate. Erosion hazard, slight to severe. Equipment limitation, slight to severe.
	Shortleaf pine	69	1. 4	
Group 6: Deep, somewhat poorly drained to poorly drained, slowly permeable soils around the head of drains, in depressions on uplands, and at the base of slopes. CiB, CiC2, WmB.	Loblolly pine	75	1. 2	Plant competition, moderate. Seedling mortality, moderate. Windthrow hazard, moderate. Equipment limitation, moderate. Erosion hazard, moderate on steeper slopes.
	Shortleaf pine	66	1. 3	
Group 7: Somewhat excessively drained soil on uplands; low available moisture capacity. LjF.	Loblolly pine	63	1. 0	Equipment limitation, severe. Seedling mortality, severe. Drought hazard, severe. Erosion hazard, very severe. Windthrow hazard, moderate.
	Shortleaf pine	55	1. 0	
Group 8: Somewhat poorly drained to poorly drained soils on first bottoms and stream terraces. Alp, Avp, Afs, Csl, Wea.	Loblolly pine	88	1. 5	Plant competition, severe. Equipment limitation, severe. Seedling mortality, moderate.
	Shortleaf pine	79	1. 6	

[1] Species of greatest commercial value.
[2] Average height of dominant trees at 50 years of age.
[3] Annual growth to age 35. Adapted from USDA Misc. Pub. No. 50 (*8*), USDA Tech. Bul. 560 (*9*), and USDA Southern Forest Expt. Sta. Occ. Paper No. 54 (*6*).

moderate to severe, proper ground cover should be maintained. Drought is not a hazard.

WOODLAND SUITABILITY GROUP 3

This group consists of deep, moderately well drained and well drained soils on stream terraces. Permeability is moderately slow and moderate. The soils are—

AkB Altavista fine sandy loam, 2 to 6 percent slopes.
WgB2 Wickham fine sandy loam, 2 to 6 percent slopes, eroded.

The average site index is 75 for loblolly pine and 68 for shortleaf pine.

Competition from brush and other undesirable plants is slight. Generally, the undesirable plants do not impede, to any great extent, regeneration and growth of desirable trees.

The equipment limitation is slight. All commonly used equipment can be operated throughout the year.

The seedling mortality is moderate. Ordinarily, losses of between 25 and 50 percent of planted stock may be expected, and some replanting may be required. Natural regeneration cannot always be relied upon for restocking. To assure adequate and immediate restocking by natural means, special treatment is usually needed.

The erosion hazard is slight to moderate, depending on the slope and on past erosion, but its control should not be

overlooked in planning management practices. Slight to moderate drought damage can be expected after an extended dry period.

Windthrow is not a problem.

WOODLAND SUITABILITY GROUP 4

This group consists of severely eroded to very severely eroded, deep, well-drained soils on uplands. Their surface layer ranges from sandy clay loam to clay. Permeability is moderately slow to moderate. The slope range is 2 to 45 percent, but most of the acreage has a slope of less than 10 percent. The soils are—

AnB3	Appling sandy clay loam, 2 to 6 percent slopes, severely eroded.
AnC3	Appling sandy clay loam, 6 to 10 percent slopes, severely eroded.
AnD3	Appling sandy clay loam, 10 to 15 percent slopes, severely eroded.
CZB3	Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded.
CZC3	Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded.
CZD3	Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded.
CZE3	Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded.
CZC4	Cecil-Gullied land complex, 6 to 10 percent slopes.
CZD4	Cecil-Gullied land complex, 10 to 15 percent slopes.
DpB3	Davidson clay, 2 to 6 percent slopes, severely eroded.
DpC3	Davidson clay, 6 to 10 percent slopes, severely eroded.
DpD3	Davidson clay, 10 to 15 percent slopes, severely eroded.
LeB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded.
LeC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded.
LeD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded.
LeE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded.
LeF3	Lloyd clay loam, 25 to 45 percent slopes, severely eroded.
LeC4	Lloyd-Gullied land complex, 6 to 10 percent slopes.
LeD4	Lloyd-Gullied land complex, 10 to 15 percent slopes.
MlB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded.
MlC3	Madison sandy clay loam, 6 to 10 percent slopes, severely eroded.
MlD3	Madison sandy clay loam, 10 to 15 percent slopes, severely eroded.
MlE3	Madison sandy clay loam, 15 to 25 percent slopes, severely eroded.

The average site index is 74 for loblolly pine (fig. 15) and 66 for shortleaf pine.

Competition from brush and other undesirable plants is slight. No special treatment to control the invading plants is needed.

The equipment limitation is moderate to severe because these soils are slippery for a short period after a heavy rain. Operating equipment when the soil is wet, aside from being difficult because of the slippery surface, is likely to injure tree roots and cause deterioration of soil structure and stability.

Seedling mortality is moderate because of the unfavorable soil characteristics resulting from erosion. Losses of between 25 and 50 percent of planted stock can usually be expected, and some replanting may be needed to fill in openings.

The erosion hazard is moderate on the more gentle slopes and very severe on the steep ones.

The windthrow hazard is slight.

WOODLAND SUITABILITY GROUP 5

This group consists of well-drained to somewhat excessively drained soils on uplands. Depth to bedrock ranges from a few inches to many feet. Permeability is moderately slow to rapid, and the available moisture capacity is low to moderately high. The slope range is 0 to 45 percent. A sizable acreage is stony. The soils are—

Figure 15.—**Five-year-old loblolly pine on Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded.**

AxA	Appling coarse sandy loam, 0 to 2 percent slopes.
AxB	Appling coarse sandy loam, 2 to 6 percent slopes.
AxB2	Appling coarse sandy loam, 2 to 6 percent slopes, eroded.
AxC2	Appling coarse sandy loam, 6 to 10 percent slopes, eroded.
AxD2	Appling coarse sandy loam, 10 to 15 percent slopes, eroded.
CdB	Cecil coarse sandy loam, 2 to 6 percent slopes.
CdB2	Cecil coarse sandy loam, 2 to 6 percent slopes, eroded.
CdC2	Cecil coarse sandy loam, 6 to 10 percent slopes, eroded.
CdD2	Cecil coarse sandy loam, 10 to 15 percent slopes, eroded.
CdE2	Cecil coarse sandy loam, 15 to 25 percent slopes, eroded.
DjA	Durham loamy coarse sand, 0 to 2 percent slopes.
DjB	Durham loamy coarse sand, 2 to 6 percent slopes.
LCB	Louisburg loamy coarse sand, 2 to 6 percent slopes.
LCC	Louisburg loamy coarse sand, 6 to 10 percent slopes.
LCD	Louisburg loamy coarse sand, 10 to 15 percent slopes.
LCE2	Louisburg loamy coarse sand, 15 to 25 percent slopes, eroded.
LDC	Louisburg stony loamy coarse sand, 6 to 10 percent slopes.
LDE	Louisburg stony loamy coarse sand, 10 to 25 percent slopes.
LDF	Louisburg stony loamy coarse sand, 25 to 45 percent slopes.

The average site index is 78 for loblolly pine and 69 for shortleaf pine.

Because of lack of moisture, plant competition is very slight on the Louisburg soils. On the other soils, it is moderate on the gentle slopes and severe on many of the steep ones.

Seedling mortality is moderate on the Louisburg soils because of low available moisture capacity. Losses of between 25 and 50 percent can be expected, unless rainfall is plentiful during the planting season and throughout the first growing season. Seedling mortality is slight on all the soils of this group except the Louisburg soils.

The equipment limitation and the erosion hazard are slight on the gentle slopes and severe on the steep ones.

The drought hazard is slight to moderate; some damage can be expected in a long dry period.

The windthrow hazard is slight.

WOODLAND SUITABILITY GROUP 6

This group consists of deep, somewhat poorly drained to poorly drained, slowly permeable soils around the head of

drains, in depressions on uplands, and at the base of slopes. The soils are—

CiB Colfax sandy loam, 2 to 6 percent slopes.
CiC2 Colfax sandy loam, 6 to 10 percent slopes, eroded.
WmB Worsham soils, 2 to 6 percent slopes.

The average site index is 75 for loblolly pine and 66 for shortleaf pine.

Plant competition is moderate. Inadequate drainage promotes invasion by many undesirable species. The invaders usually do not prevent regeneration but may delay restocking and retard growth, unless controlled.

Seedling mortality is moderate because of a shallow root zone and a slowly permeable subsoil. Normally, losses of between 25 and 50 percent may be expected, and replanting may be required to fill in openings. Natural regeneration cannot always be relied upon.

The equipment limitation and the windthrow hazard are moderate because of the inadequate drainage and the shallow root zone.

The erosion hazard is moderate on the steepest slopes.

WOODLAND SUITABILITY GROUP 7

Louisa fine sandy loam, 15 to 45 percent slopes (LjF), is the only soil in this group. It is a somewhat excessively drained soil on uplands. The root zone is shallow to deep, the available moisture capacity is low, and permeability is moderately rapid.

The average site index is 63 for loblolly pine and 55 for shortleaf pine.

Plant competition is slight.

The equipment limitation is severe because of the steep slopes and the erosion hazard.

Seedling mortality is severe, especially where the root zone is shallow. If drought occurs, more than 50 percent mortality may be expected.

The drought hazard is severe. Considerable mortality may be expected among the larger trees following a long dry period.

The erosion hazard is very severe. To control erosion, an adequate ground cover should be maintained, but the rocky subsoil may limit root development.

The windthrow hazard is moderate.

WOODLAND SUITABILITY GROUP 8

This group consists of somewhat poorly drained and poorly drained soils on first bottoms and low stream terraces. Because of the level to nearly level topography, a high water table, and inadequate drainage outlets, excessive moisture is a problem on much of the acreage. The soils are—

Alp Alluvial land, moderately wet.
Avp Alluvial land, wet.
Afs Augusta fine sandy loam.
Csl Chewacla silt loam.
Wea Wehadkee silt loam.

The average site index is 88 for loblolly pine and 79 for shortleaf pine. Excessive moisture prevents the establishment of more than a partial stand of pine on these soils. Hardwoods are generally better suited than pines.

The excessive moisture promotes invasion and growth of many undesirable species; thus, plant competition is severe. Control of the invaders is necessary before a desired stand can become established.

The equipment limitation is severe. Heavy or frequent rains prevent the operation of logging equipment for long periods.

Seedling mortality is moderate because of the excessive moisture. In some years, 25 to 50 percent of naturally occurring seedlings die; thus, the development of fully stocked stands is delayed or prevented.

The windthrow hazard is slight to moderate. Because the excessive moisture limits root development, some species may be damaged during windy periods.

Erosion and drought are not problems.

Protective practices

Grazing, fire, insects, and disease damage or destroy trees and reduce the amount of wood products harvested.

Heavy grazing not only destroys seedlings and damages trees but also makes the soil more likely to erode and less likely to take in and store water. Uncontrolled grazing is particularly harmful on steep or eroded woodland. If such areas must be used for grazing, the livestock should be distributed so that not more than 40 percent of the low-growing cover is eaten. Grazing is less harmful to woodland in April, May, and June than it is at other times, because more forage is available in those months. Cattle generally damage trees less than other grazing animals do.

Fire not only kills seedlings, young trees, and some of the larger trees but also destroys humus and litter and thereby increases the hazard of erosion. Firebreaks help protect wooded areas by checking or stopping fires. A firebreak may be a road in the woods or a plowed or disked fire lane. At a firebreak, the firefighters can start a backfire, which is a fire set to counter an advancing fire. Firebreaks should tie into streams, ponds, public roads, utility rights-of-way, or other barriers.

Serious losses from diseases and insects are not likely on woodland in Walton County; however, to avoid possible damage from insects, cuttings should be made in fall or winter. The woodland should be logged with care, so that the trees left standing are not scarred and made more susceptible to disease.

Wildlife and Fish [5]

Most of the soils in Walton County are suited to, and support, one or more kinds of wildlife. Some species spend most or all of their time in woods; others prosper in open farmlands; and some require a water habitat. Some eat only insects and other animal foods; some, only vegetative foods; and others, a combination of the two.

Bobwhites, mourning doves, rabbits, squirrels, fox, opossums, raccoons, and many nongame birds are common throughout the county. Most farms have suitable sites for fishponds. Deer and wild turkeys require extensive, well-watered woodlands, such as the area in the southwestern corner of the county and the large wooded areas on and adjacent to the flood plains. The long, narrow bottom lands, which are distributed along streams throughout the county, are well suited to wild ducks and beavers. Beaver dams are common in many of these areas.

A summary of the food and habitat needs of the important kinds of wildlife in Walton County follows.

BEAVER.—Beavers eat only vegetation, mostly bark, roots, and green plants. Tender bark or the cambium

[5] VERNE E. DAVISON, biologist, Soil Conservation Service, assisted in the preparation of this subsection.

of alder, ash, birch, cottonwood, maple, pine, sweetgum, and willow are their principal tree-foods. Beavers also eat honeysuckle, grass, acorns, corn, weeds, and the tender shoots of elder. The chief feeding areas are within 150 feet of water.

BOBWHITE.—Choice foods include acorns, beechnuts, blackberries, browntop millet, wild black cherries, corn, cowpeas, dewberries, flowering dogwood, annual lespedeza, bicolor lespedeza, mulberries, pecans, pine, common ragweed, sweetgum, and tickclover. Bobwhite also eat many insects. The food must be close to vegetation that provides shade and protection from predators and from adverse weather.

DEER.—Choice foods include acorns, bahiagrass, clover, cowpeas, greenbrier, honeysuckle, annual lespedeza, bicolor lespedeza, oats, fescuegrass, ryegrass, and wheat. Woodlands of 500 acres or more usually provide adequate cover.

DOVE, MOURNING.—Choice foods are browntop millet, corn, Japanese millet, pine, common ragweed, and sweetgum seed. Doves do not eat insects, green leaves, or fruit. They drink water daily.

DUCKS.—Choice foods are acorns, beechnuts, browntop millet, corn, Japanese millet, and smartweed seed. These foods must be covered with water to be readily available to ducks. Occasionally, ducks will eat acorns and corn on dry land.

RABBIT.—Cover, such as a blackberry or plum thicket, is a prime requirement in rabbit habitats. Choice foods are clover, winter grass, and other succulent vegetation.

SQUIRREL.—Choice foods are acorns, beechnuts, blackgum, black cherries, corn, flowering dogwood, hickory nuts, mulberries, pecans, and pine seed.

TURKEY, WILD.—Turkeys survive only in large wooded areas—generally 1,000 acres or larger in size. They need water for daily drinking, and they often roost in large trees over or near water. Choice foods are insects, acorns, bahiagrass seed, beechnuts, blackberries, dewberries, browntop millet, clover leaves, corn, cowpeas, flowering dogwood, wild grapes, hackberries, mulberries, oats, pecans, pine seed, rescuegrass, ryegrass forage, and wheat.

NONGAME BIRDS.—The foods of the many kinds of nongame birds vary greatly. Several species eat only insects. A few eat insects and fruit. Several others eat insects, fruit, and acorns. In table 10, the food ratings for nongame birds are general ones, and numerous exceptions to them exist.

FISH.—The principal game fish in Walton County are bluegill, bass, and channel catfish. The bluegill's choice foods are aquatic worms, insects, and insect larvae. Bass and channel catfish feed on small fish. The supply of food for fish depends on the fertility of the water, on the nature of the soils of the watershed, and somewhat on the nature of the soils in the bottom of the pond. Because of the low fertility and the acidity of the soils, most ponds in this county need fertilizer and lime to produce enough food for fish.

The county unit of the Soil Conservation Service maintains specific, up-to-date, technical guides for each important kind of wildlife and fish, and for each significant plant that provides food or cover for wildlife. It also has specifications for establishment and maintenance of each soil and water conservation practice that is adaptable to the soils and waters in the county. Thus, any landowner can obtain practical help in planning and establishing food supply and habitat for the kinds of wildlife or fish he wishes to favor.

Wildlife suitability groups

The soils in Walton County have been placed in nine wildlife suitability groups. All the soils in one group are estimated to have similar capacity to produce food and cover for wildlife. These groups are discussed in the following pages.

Table 10 lists the important food plants in the county and rates them as *choice*, *fair*, or *unimportant* as foods for the given kinds of wildlife. Table 11 lists the same plants and rates them as *suited*, *marginally suited*, or *poorly suited* to the soils in the nine suitability groups.

The plants listed in tables 10 and 11 also furnish cover for some species. A shortage of cover is not likely to be a problem in the county, because the climate is such that vegetation is generally abundant, or even excessive, or can be grown readily where needed.

WILDLIFE SUITABILITY GROUP 1

This group consists of deep, moderately well drained to well drained soils on uplands and stream terraces. The slope range is 0 to 10 percent. The surface layer is loam to loamy coarse sand, and the subsoil is clay to sandy clay loam. Plant roots can penetrate effectively to a depth of 36 inches or more. Tilth is good. Permeability is moderate to moderately slow, and the available moisture capacity is moderately high. The soils are—

Altavista fine sandy loam, 2 to 6 percent slopes.
Appling coarse sandy loam, 0 to 2 percent slopes.
Appling coarse sandy loam, 2 to 6 percent slopes.
Appling coarse sandy loam, 2 to 6 percent slopes, eroded.
Appling coarse sandy loam, 6 to 10 percent slopes, eroded.
Cecil coarse sandy loam, 2 to 6 percent slopes.
Cecil coarse sandy loam, 2 to 6 percent slopes, eroded.
Cecil coarse sandy loam, 6 to 10 percent slopes, eroded.
Davidson loam, 2 to 6 percent slopes, eroded.
Davidson loam, 6 to 10 percent slopes, eroded.
Durham loamy coarse sand, 0 to 2 percent slopes.
Durham loamy coarse sand, 2 to 6 percent slopes.
Lloyd sandy loam, 2 to 6 percent slopes, eroded.
Lloyd sandy loam, 6 to 10 percent slopes, eroded.
Wickham fine sandy loam, 2 to 6 percent slopes, eroded.

These soils occupy about one-fourth of the county, and about 65 percent of their acreage is cultivated or is used as pasture. They are suited to many of the plants that provide choice foods for several kinds of wildlife. Because of their position and slope, these soils are not subject to flooding and therefore do not provide suitable feeding places for ducks. Many drains in these areas are suitable sites for ponds.

WILDLIFE SUITABILITY GROUP 2

This group consists of deep, well-drained soils on uplands. The slope range is 10 to 25 percent. The subsoil is clay to sandy clay loam. Plant roots can penetrate effectively to a depth of 36 inches or more. Because of steep slopes, these soils are difficult to work and highly susceptible to erosion. Permeability is moderate to moderately slow, and the available moisture capacity is moderately high. The soils are—

Appling coarse sandy loam, 10 to 15 percent slopes, eroded.
Cecil coarse sandy loam, 10 to 15 percent slopes, eroded.
Cecil coarse sandy loam, 15 to 25 percent slopes, eroded.
Lloyd sandy loam, 10 to 15 percent slopes, eroded.
Lloyd sandy loam, 15 to 25 percent slopes, eroded.

TABLE 10.—*Suitability of plants as food for wildlife*

[The figure *1* indicates that the plant is *choice* (attractive and nutritious for a given kind of wildlife); the figure *2*, *fair* (eaten when choice foods are unavailable); the figure *3*, *unimportant* (eaten only in small amounts)]

Plant	Part of plant eaten	Bobwhite	Deer	Dove	Duck	Rabbit	Squirrel	Turkey	Nongame birds [1]		
									Fruit eaters	Grain and seed eaters	Nut and acorn eaters
Bahiagrass	Forage	3	1	3	3	3	3	3	3	3	3
	Seed	2	3	2	3	3	3	1	3	2	3
Beech	Nut	1	2	3	1	3	1	1	3	3	1
Blackberry	Fruit	1	3	3	3	3	2	1	1	3	3
	Forage	3	2	3	3	3	3	3	3	3	3
Blackgum	Fruit	2	3	3	3	3	1	2	1	3	2
Browntop millet	Seed	1	3	1	1	3	3	1	3	1	3
Buttonclover	Forage	2	1	3	3	1	3	1	3	3	3
Cherry, black	Fruit	1	3	3	3	3	1	2	1	3	2
Clover, crimson	Forage	2	1	3	3	1	3	1	3	3	3
Clover, white	Forage	2	1	3	3	1	3	1	3	3	3
Corn	Seed	1	1	1	1	1	1	1	3	1	2
Cowpeas	Seed	1	1	2	3	1	3	1	3	1	3
Dewberry	Fruit	1	3	3	3	2	2	1	1	3	3
Dogwood, flowering	Fruit	1	3	3	3	3	1	1	1	3	3
Fescue, tall	Forage	3	2	3	3	2	3	2	3	3	3
Grapes, wild	Fruit	3	3	3	3	3	2	1	1	3	3
Greenbrier	Forage	3	1	3	3	1	3	3	3	3	3
Hackberry	Fruit	2	3	3	3	3	2	1	1	3	3
Hickory	Nuts	3	3	3	3	3	1	2	3	3	1
Honeysuckle	Forage	3	1	3	3	2	3	3	3	3	3
Japanese millet	Seed	1	3	1	1	3	3	2	3	1	3
Lespedeza, annual	Forage	3	1	3	3	2	3	3	3	3	3
	Seed	1	3	2	3	3	3	2	3	3	3
Lespedeza, bicolor	Forage	3	1	3	3	2	3	3	3	3	3
	Seed	1	3	3	3	3	3	3	3	3	3
Lespedeza, sericea	Seed	3	3	3	3	3	3	3	3	3	3
Mulberry	Fruit	1	2	3	3	3	1	1	1	3	3
Oak	Acorns	1	1	3	1	3	1	1	3	3	1
Oats	Forage	3	1	3	3	1	3	1	3	3	3
Pecan	Nut	1	2	3	3	3	1	1	3	3	1
Pine	Seed	1	3	1	3	3	1	1	3	1	1
Ragweed, common	Seed	1	3	1	3	3	3	3	3	1	3
Rescuegrass	Forage	3	1	3	3	1	3	1	3	3	3
Ryegrass	Forage	3	1	3	3	1	3	1	3	3	3
Smartweed	Seed	3	3	3	1	3	3	3	3	3	3
Sorghum, grain [2]	Seed	1	1	1	1	1	1	1	3	1	3
Sweetgum	Seed	1	3	1	3	3	2	2	3	1	3
Tickclover (beggarlice)	Seed	1	3	3	3	3	3	2	3	3	3
Wheat	Forage	3	1	3	3	1	3	1	3	3	3

[1] Fruit eaters include bluebirds, catbirds, mockingbirds, and waxwings. Grain and seed eaters include blackbirds, cardinals, meadowlarks, sparrows, and towhees. Nut and acorn eaters include chickadees, grackles, bluejays, titmice, and woodpeckers.

[2] Grain sorghum is a choice food of most wildlife that feed on grain. It is limited in value and suitability because the humid climate causes it to rot and because it attracts blackbirds, cowbirds, sparrows, and other undesirable birds.

These soils are extensive and are distributed throughout the county. Most of the acreage is wooded. Because of the slope, these soils are not suited to annual plants. They are marginal for perennial grass, lespedeza, and some woody plants. They are suited to blackgum, wild black cherry, flowering dogwood, hickory, and pine. Many drains in these areas are favorable sites for ponds.

WILDLIFE SUITABILITY GROUP 3

This group consists of deep, well-drained, severely eroded soils on uplands. The slope range is 2 to 10 percent. The surface layer is 5 to 7 inches thick and ranges in texture from sandy clay loam to clay. The subsoil is sandy clay loam to clay. Plant roots can penetrate effectively to a depth of 36 inches or more. Tilth is poor. Permeability is moderate to moderately slow, and the available moisture capacity is moderately high. The soils are—

Appling sandy clay loam, 2 to 6 percent slopes, severely eroded.
Appling sandy clay loam, 6 to 10 percent slopes, severely eroded.
Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded.
Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded.
Davidson clay, 2 to 6 percent slopes, severely eroded.
Davidson clay, 6 to 10 percent slopes, severely eroded.
Lloyd clay loam, 2 to 6 percent slopes, severely eroded.
Lloyd clay loam, 6 to 10 percent slopes, severely eroded.
Madison sandy clay loam, 2 to 6 percent slopes, severely eroded.
Madison sandy clay loam, 6 to 10 percent slopes, severely eroded.

TABLE 11.—*Suitability of plants to soils, by wildlife suitability groups*

[The figure *1* indicates that the plant is *suited* to the soils in the given soil groups; the figure *2, marginally suited;* the figure *3, poorly suited* or *not suited*]

Plants	Wildlife suitability group—								
	1	2	3	4	5	6	7	8	9
Bahiagrass	1	3	2	3	2	3	1	2	3
Beech	2	2	3	3	3	2	1	2	3
Blackberry	1	1	2	3	2	2	1	1	3
Blackgum	1	1	3	3	3	3	1	1	3
Browntop millet	1	3	2	3	2	3	1	1	3
Buttonclover	1	3	2	3	3	3	1	2	3
Cherry, black (wild)	1	1	3	3	2	2	1	2	3
Clover, crimson	1	3	2	3	2	3	1	2	3
Clover, white	1	3	3	3	3	3	1	1	2
Corn	1	3	2	3	2	3	1	2	3
Cowpeas	1	3	2	3	2	3	1	2	3
Dewberry	1	2	2	2	2	3	2	2	3
Dogwood, flowering	1	1	2	3	1	2	1	2	3
Fescue, tall	1	2	2	3	3	3	1	1	2
Grapes, wild	1	1	2	2	2	2	1	2	3
Greenbrier	1	2	2	2	2	2	1	2	3
Hackberry	1	2	2	3	3	3	1	2	3
Hickory	1	1	3	3	2	2	1	2	3
Honeysuckle	1	3	2	3	3	3	1	2	3
Japanese millet	1	3	3	3	3	3	1	1	1
Lespedeza, annual	1	2	1	2	2	3	1	2	3
Lespedeza, bicolor	1	2	1	2	2	3	1	3	3
Lespedeza, sericea	1	2	1	2	2	3	1	3	3
Mulberry	1	2	3	3	3	3	1	2	3
Oak [1]	1	2	3	3	2	2	1	2	[2] 1
Oats (forage)	1	3	2	3	2	3	1	3	3
Pecan	1	2	3	3	2	3	1	2	3
Pines (loblolly and shortleaf)	1	1	2	2	2	2	1	2	3
Ragweed, common	1	3	2	3	3	3	1	3	3
Rescuegrass	1	3	2	3	3	3	1	2	3
Ryegrass	1	3	2	3	2	3	1	2	3
Smartweed	3	3	3	3	3	3	2	1	1
Sorghum, grain [3]	3	3	3	3	3	3	3	3	3
Sweetgum	1	1	2	3	2	3	1	1	2
Tickclover (beggarlice)	1	2	1	2	2	3	1	3	3
Wheat (forage)	1	3	2	3	2	3	1	3	3

[1] Suitable oak trees include black oak, blackjack oak, northern red oak, pin oak, post oak, sawtooth oak, scarlet oak, shumard oak, southern red oak, water oak, white oak, and willow oak.

[2] Overcup oak only.

[3] Because grain sorghum attracts flocks of blackbirds, sparrows, and other undersirable birds, and because it rots quickly in this humid climate, it is rated *poorly suited* although it grows well on many soils in the county.

These soils are extensive throughout the county. Nearly all of their acreage has been cultivated in the past. Because of poor tilth and severe erosion, plants are difficult to establish and maintain. These soils are suited to dewberry, lespedeza, pine, and tickclover. They are only marginal for cultivated crops, clover, grass, small grain, and most shrubs and hardwoods. Many drains in these areas are favorable sites for ponds.

WILDLIFE SUITABILITY GROUP 4

This group consists of well-drained, severely eroded to very severely eroded soils on uplands. Gullies have formed in places. The slope range is 6 to 45 percent. The surface layer ranges in texture from sandy clay loam to clay and is 4 to 7 inches thick. Plant roots can penetrate effectively to a depth of 36 inches or more, except in areas that are gullied or very severely eroded. Tilth is poor. The available moisture capacity is low to moderate. Water moves slowly into the soil. Permeability in the subsoil is moderate to moderately slow. The soils are—

Appling sandy clay loam, 10 to 15 percent slopes, severely eroded.
Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded.
Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded.
Cecil-Gullied land complex, 6 to 10 percent slopes.
Cecil-Gullied land complex, 10 to 15 percent slopes.
Davidson clay, 10 to 15 percent slopes, severely eroded.
Gullied land.
Lloyd clay loam, 10 to 15 percent slopes, severely eroded.
Lloyd clay loam, 15 to 25 percent slopes, severely eroded.
Lloyd clay loam, 25 to 45 percent slopes, severely eroded.
Lloyd-Gullied land complex, 6 to 10 percent slopes.
Lloyd-Gullied land complex, 10 to 15 percent slopes.
Madison sandy clay loam, 10 to 15 percent slopes, severely eroded.
Madison sandy clay loam, 15 to 25 percent slopes, severely eroded.

These soils are extensive throughout the county. Most of the acreage has been cultivated in the past, but now much of it is reverting to pine. Because of severe erosion and moderate to steep slopes, vegetation is difficult to establish and maintain. Generally, these soils are not suited to plants that can provide food for wildlife. They are marginal for lespedeza, pine, and tickclover. Many drains in these areas are favorable sites for ponds.

WILDLIFE SUITABILITY GROUP 5

This group consists of somewhat excessively drained soils on uplands. They have little or no B horizon. The depth to bedrock varies from a few inches to 4 feet, and plant roots can penetrate effectively to a depth of only 24 inches or less. These soils are easily worked. They have a low available moisture capacity. The soils are—

Louisburg loamy coarse sand, 2 to 6 percent slopes.
Louisburg loamy coarse sand, 6 to 10 percent slopes.

Because of the low available moisture capacity and the shallow root zone, these soils are marginal or poor for most plants that provide food for wildlife. They are best suited to pine and flowering dogwood. Because they are shallow to bedrock, they are poor sites for ponds.

WILDLIFE SUITABILITY GROUP 6

This group consists of shallow, stony, and rocky soils that have little or no B horizon. The slope range is 6 to 45 percent. The available moisture capacity is low. The areas of rock outcrop will not support vegetation continuously. The soils are—

Lloyd stony loam, 10 to 25 percent slopes.
Louisa fine sandy loam, 15 to 45 percent slopes.
Louisburg loamy coarse sand, 10 to 15 percent slopes.
Louisburg loamy coarse sand, 15 to 25 percent slopes, eroded.
Louisburg stony loamy coarse sand, 6 to 10 percent slopes.
Louisburg stony loamy coarse sand, 10 to 25 percent slopes.
Louisburg stony loamy coarse sand, 25 to 45 percent slopes.
Rock outcrop.

These soils are extensive west of Walnut Grove, and they occur in small areas throughout the county. Nearly all the acreage is wooded. Because they are stony and steep and have low available moisture capacity, these soils are unsuitable for cultivation. They are suited

only to hickory, oak, and a few other plants that provide food for wildlife. Because they are stony and shallow, these soils are unsuitable for pond sites. Permanent streams and springs are scarce in some areas.

WILDLIFE SUITABILITY GROUP 7

This group consists of deep, well drained and moderately well drained soils around the head of drainageways or on first bottoms along creeks. The areas on first bottoms are flooded occasionally for short periods, usually less than 2 days. The surface layer is loamy sand to silt loam and is 5 to 10 inches thick. The underlying material is predominantly sandy loam. These soils are easily worked. Plant roots can penetrate effectively to a depth of 30 inches or more. The available moisture capacity is high. The soils are—

Alluvial land.
Local alluvial land.

Small areas of these soils are scattered throughout the county. Much of the acreage is cultivated or is used as pasture. These soils are suited to most of the plants that provide food for wildlife. Some areas can be flooded for use as duck fields. Sites suitable for ponds are common on Alluvial land.

WILDLIFE SUITABILITY GROUP 8

This group consists of deep, somewhat poorly drained soils on first bottoms, around the head of drains, or on low stream terraces. The first bottoms are flooded frequently for periods of 1 to 5 days. The plow layer is silt loam to loamy sand. Plant roots can penetrate effectively to a depth of 22 to 30 inches. If adequately drained, these soils are easily worked. The available moisture capacity is high. The soils are—

Alluvial land, moderately wet.
Augusta fine sandy loam.
Chewacla silt loam.
Colfax sandy loam, 2 to 6 percent slopes.
Colfax sandy loam, 6 to 10 percent slopes, eroded.

These soils are moderately extensive in the county. Much of the acreage is wooded or is idle. Because of somewhat poor drainage, a high water table, and susceptibility to flooding, these soils are suited to only a few plants that provide food for wildlife. Browntop millet, white clover, tall fescue, Japanese millet, and smartweed can be grown. Many areas can be flooded for use as duck fields. Water can be impounded, or ponds can be dug on these soils.

WILDLIFE SUITABILITY GROUP 9

This group consists of poorly drained soils on first bottoms and in depressions on uplands. The first bottoms are flooded for periods of a few days to several weeks every year. The surface layer is loamy sand to silt loam and is 4 to 10 inches thick. Beneath this is gray material that ranges from loamy sand to silty clay and clay. Because of a high water table, these soils have a shallow root zone. Tilth ranges from poor to good. The soils are—

Alluvial land, wet.
Wehadkee silt loam.
Worsham soils, 2 to 6 percent slopes.

Japanese millet and smartweed for ducks, and the woody plants eaten by beavers, are the only choice wildlife food plants to which these soils are suited. Most areas can be flooded for use as duck fields. Water can be impounded, or ponds can be dug.

Engineering Characteristics of the Soils [6]

Some soil properties are of special interest to the engineer because they affect construction and maintenance of roads, airports, pipelines, building foundations, structures for water storage, structures for controlling erosion, drainage systems, and sewage disposal systems. The soil properties most important to the engineer are permeability to water, shear strength, drainage, grain size, plasticity, and pH. Compaction characteristics, shrink-swell characteristics, depth to water table, depth to bedrock, and topography are perhaps almost as important.

The characteristics of the soils in Walton County are described in detail in the section "Descriptions of the Soils." Those characteristics that affect engineering are interpreted in this section for engineers and others concerned with use of soil material in construction.

Information in this section is useful in—

1. Making soil and land use studies that will aid in the selection and development of industrial, business, residential, and recreational sites.
2. Determining the suitability of the soils for agricultural drainage systems, farm ponds, irrigation systems, and diversion terraces.
3. Evaluating the soils at proposed sites of airports, highways, pipelines, and cables, and planning detailed investigations at selected sites.
4. Locating probable sources of gravel and other construction material.
5. Correlating the properties of the soils with the condition of existing engineering structures on the soils, and thus developing information that will aid in maintaining existing structures and in planning future construction.
6. Determining whether or not vehicles and construction equipment can be moved over the soils.
7. Making maps and reports.

The interpretations in this section do not eliminate the need for sampling and testing the soil material in place at the proposed site of engineering work; they should be used primarily in planning more detailed field investigations.

Some terms used by soil scientists may be unfamiliar to engineers; other terms, for example, *soil*, *sand*, *silt*, *clay*, and *subsoil* have special meanings in soil science. These terms and others are defined in the Glossary at the back of this report.

Engineering classification systems

The engineering classification systems now most widely used are the American Association of State Highway Officials (AASHO) system (*2*) and the Unified system (*11*). Both systems classify soil material according to gradation and plasticity characteristics.

The AASHO system is used by most highway engineers. It places soil material in seven principal groups. The groups range from A–1, which consists of gravelly soils of high bearing capacity, to A–7, which consists of clayey

[6] R. G. SADLER, agricultural engineer, Soil Conservation Service, assisted in preparing this section.

soils that have low strength when wet. Tables 12 and 13 show these groups. Within each group the relative engineering value of the soil material is indicated by a group index number. The numbers range from 0 for the best material to 20 for the poorest. Table 12, in the next to last column, shows the group index numbers of the soils tested. The numbers are in parentheses following the AASHO soil group symbol.

The Unified Soil Classification system is preferred by some engineers and by some agencies in engineering work. This system classifies soil material as coarse grained (eight classes), fine grained (six classes), or highly organic (one class).

Table 12 shows both the AASHO and the Unified classification of the soils tested. Table 13 shows the estimated classification of all soils in the county according to both systems.

Engineering test data

To help evaluate the soils for engineering purposes, samples from 15 profiles of the principal soil types of five soil series were tested. Table 12 gives the results. Footnotes to this table give the methods of testing that were used.

One ortho, or modal, profile of the series and two additional profiles having significant variations within the series were chosen to be sampled for engineering tests. The ortho profile is the most nearly typical for the soil series as it occurs in the county. The test data show some variations in physical characteristics, but they probably do not show the maximum variations that exist. The samples tested were generally taken from a depth of less than 7 feet. They therefore do not represent materials encountered in earthwork at a greater depth.

In the moisture-density (compaction) test, soil material is compacted into a mold several times, each time at a successively higher moisture content, while the compactive effort remains constant. The dry density (unit weight) of the compacted material increases as the moisture content increases, until the optimum moisture content is reached. After that, the dry density decreases as the moisture content increases. The highest dry density obtained in the test is the *maximum dry density*, and the corresponding moisture content is the *optimum moisture*. Moisture-density data are important in earthwork because, as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density at approximately optimum moisture.

The engineering soil classifications in table 12 are based on mechanical analysis and on tests that determine the liquid limit and the plastic limit of soils. The mechanical analysis was made by combined sieve and hydrometer methods. The results are useful in determining the relative proportions of the different sized particles. The percentages of clay obtained by the hydrometer method are not used for naming soil textural classes, since soil scientists determine percentage of clay by the pipette method.

The liquid limit and the plasticity index indicate the effect of water on the consistence of the soil material. As the moisture content of a clayey soil increases, the material changes from semisolid to plastic, and then from plastic to liquid. The *plastic limit* is the moisture content at which the material changes from semisolid to plastic. The *liquid limit* is the moisture content at which the material changes from plastic to liquid. The *plasticity index* is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which the soil material is plastic.

Engineering descriptions and physical properties

Table 13 gives estimates of some of the soil characteristics significant in engineering, and the engineering classification of the soil material in the principal horizons. All of the mapping units are listed in this table except Gullied land and Rock outcrop, which are miscellaneous land types that are extremely variable in their characteristics.

The column headed "Brief description" gives a general description of a profile, the depth to the seasonal high water table, and the depth to bedrock. The depth to the seasonal high water table is the approximate distance, in feet, from the surface to the free water in the soil during the wettest part of the year. The depth to bedrock refers to the approximate distance, in feet, from the surface to the solid rock. The depth to the seasonal high water table and the depth to bedrock are based on field observations.

Permeability was estimated by observing the soil as it occurred in place. The estimates, based on soil structure and porosity, were compared with the results of permeability tests on undisturbed cores of similar soil material.

The available water capacity, measured in inches per inch of soil, is an approximation of the amount of capillary water in a soil that is wet to field capacity. When the soil is air dry, this amount of water will wet the soil material described to a depth of 1 inch without deeper percolation. These estimates are based on the results of experiments with similar soils.

Reaction, which indicates the degree of acidity or alkalinity of the soil, is expressed as pH value. The pH values shown in table 13 were determined by field test.

The shrink-swell potential indicates the volume change to be expected when the soil material dries (shrinking) and when it takes up moisture (swelling). This potential is based on volume-change tests. The ratings in table 13 were estimated primarily on the basis of the amount and type of clay in the soil material. In general, soils classified as CH and A–7 have high shrink-swell potential. Clean sand and gravel (single-grain structure), and sand and gravel containing a small amount of nonplastic to slightly plastic fines, as well as most nonplastic to slightly plastic soil material, have low shrink-swell potential.

Engineering interpretations

Table 14 shows features of soils that affect the selection, design, or application of land-treatment measures, and rates the suitability of the soils for specific purposes. The information in this table is based on the estimated data in table 13, on the actual test data in table 12, and on field experience. Gullied land and Rock outcrop were not included in this table.

The ratings as a source of topsoil are based on suitability for dressing slopes and road shoulders and for lining ditches to promote growth of vegetation. The ratings as a source of sand are based on suitability for use as subgrade material in highway construction. None of the

TABLE 12—*Engineering*

[Tests performed by State Highway Department of Georgia in cooperation with U.S. Department of Commerce, Bureau of Public

Soil name and location of sample	Parent material	Georgia report No.	Depth	Horizon	Moisture-density data [1]		Mechanical analysis [2]		
							Volume change [3]		
					Maximum dry density	Optimum moisture	Shrinkage	Swell	Total volume change
		S59 & 60Ga-147-	*In.*		*Lb. per cu. ft.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Cecil sandy clay loam:									
7.5 miles NE. of Monroe and 4 miles N. of Good Hope. (Ortho)	Granite, gneiss, and schist.	5-1	0 to 6	Ap	116	13	5.9	1.3	7.2
		5-3	15 to 34	B21	94	25	11.3	4.1	15.4
		5-6	55 to 72+	C	99	21	8.0	9.2	17.2
0.5 mile NE. of Gratis. (Clayey B and C horizons)	Granite, gneiss, and schist.	12-1	0 to 9	Ap	102	20	9.7	2.3	12.0
		12-2	9 to 27	B2	92	26	12.7	4.3	17.0
		12-4	45 to 73+	C	94	23	8.0	7.9	15.9
1.5 miles E. of Loganville. (No mica)	Granite, gneiss, and schist.	4-1	0 to 6	Ap	113	16	11.1	1.2	12.3
		4-3	11 to 24	B2	100	23	11.6	1.9	13.5
		4-5	40 to 66+	C	106	17	8.1	9.5	17.6
Chewacla silt loam:									
2.7 miles E. of Loganville. (Ortho)	Recent alluvium	2-1	0 to 9	Ap	114	14	8.7	.8	9.5
		2-4	27 to 41	C13	118	11	1.6	2.1	3.7
		2-5	41 to 55+	C14	118	13	7.8	5.9	13.7
1.5 miles W. of Monroe. (Browner than ortho profile)	Recent alluvium	1-1	0 to 9	1	95	25	14.4	1.8	16.2
		1-4	26 to 41	4	107	17	8.9	5.2	14.1
		1-5	41 to 61+	5	101	17	6.9	8.8	15.7
4 miles SW. of Between and 4.5 miles SE. of Loganville. (Sandier than ortho profile)	Recent alluvium	3-1	0 to 6	1	96	22	1.3	14.8	16.1
		3-4	16 to 38	4	110	15	6.5	2.6	9.1
Louisburg stony loamy coarse sand:									
100 yards W. of fire tower on Jacks Creek Mountain, 6 miles NE. of Monroe. (Ortho)	Quartzite	8-1	0 to 6	A1	125	12	-------	-------	-------
		8-3	11 to 32	C	122	11	0	.4	.4
0.5 mile NE. of Jacks Creek Mountain, 6.5 miles NE. of Monroe. (Yellowish-red BC horizon)	Quartzite	10-1	0 to 5	A1	127	8	1.0	2.7	3.7
		10-3	14 to 23	A3	128	10	2.3	3.2	5.5
		10-5	29 to 50+	C	104	18	6.5	5.7	12.2
0.5 mile W. of Jacks Creek Mountain, 5 miles NE. of Monroe. (Red BC horizon)	Quartzite and schist	9-1	0 to 5	A1	105	14	4.4	3.9	8.3
		9-3	8 to 25	BC	92	21	10.3	3.5	13.8
		9-4	25 to 65+	C	101	19	6.4	19.5	25.9
Lloyd clay loam:									
4 miles NE. of Between and 4 miles SE. of Bold Spring. (Ortho)	Acidic and basic rock.	15-1	0 to 6	Ap	119	13	5.0	2.7	7.7
		15-2	6 to 30	B2	99	22	7.4	.5	7.9
		15-4	37 to 63+	C	108	18	8.0	4.7	12.7
2.5 miles NE. of Between and 5 miles SE. of Bold Spring. (Clayey B horizon)	Acidic and basic rock.	14-1	0 to 6	Ap	110	16	9.6	3.2	12.8
		14-2	6 to 36	B2	103	21	6.7	2.8	9.5
		14-4	50 to 72+	C	106	18	7.6	3.2	10.8
1.5 miles SE. of Gratis and 7.5 miles NE. of Monroe. (Less clayey B2 horizon)	Acidic and basic rock.	11-1	0 to 6	Ap	117	18	7.9	.5	8.4
		11-2	6 to 21	B2	88	30	14.5	3.8	18.3
		11-4	36 to 76+	C	93	24	4.3	7.2	11.5
Madison sandy clay loam:									
2 miles NW. of Gratis and 3.5 miles NE. of Campton. (Ortho)	Gneiss and schist	13-1	0 to 7	Ap	118	13	3.7	1.7	5.4
		13-2	7 to 19	B2	94	27	10.8	2.1	12.9
		13-4	24 to 77	C	103	19	6.9	7.5	14.4

See footnotes at end of table.

test data

Roads, in accordance with standard procedures of American Association of State Highway Officials, except as stated in footnote 3]

Mechanical analysis [2]—Continued										Liquid limit	Plasticity index	Classification	
Percentage passing sieve—[4]						Percentage smaller than—[4]							
3-in.	¾-in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.			AASHO [5]	Unified [6]
100	99	98	94	68	38	35	34	27	26	23	6	A-4(1)	SM-SC.
------	------	100	99	87	75	74	71	60	57	54	22	A-7-5(16)	MH.
------	------	--------	100	82	68	65	56	39	35	47	[7]	A-5(8)	ML.
100	98	93	87	77	55	52	47	40	36	34	13	A-6(5)	CL.
------	------	100	99	95	76	74	70	55	50	51	[7]	A-5(10)	MH.
------	------	--------	100	88	60	57	49	33	27	49	[7]	A-5(6)	ML.
------	------	100	98	75	45	44	41	35	32	23	7	A-4(2)	SM-SC.
------	------	--------	100	88	73	72	67	56	54	46	15	A-7-5(11)	ML.
------	------	--------	100	83	54	52	41	34	32	39	[7]	A-4(4)	ML.
------	100	99	96	81	47	44	42	24	17	24	6	A-4(2)	SM-SC.
------	------	100	99	70	35	31	25	19	16	[8]	[8]	[8]	[8].
------	------	100	99	73	45	43	37	28	23	25	7	A-4(2)	SM-SC.
------	------	100	99	97	85	82	71	46	31	40	13	A-6(9)	ML-CL.
------	100	99	97	82	56	52	44	30	22	30	9	A-4(4)	ML-CL.
------	100	96	90	75	50	47	40	26	18	31	11	A-6(3)	SC.
------	------	--------	100	92	72	66	63	40	23	51	23	A-7-6(15)	MH-CH.
------	------	--------	100	84	55	50	41	28	22	25	7	A-4(4)	ML-CL.
[9] 100	70	49	42	25	14	12	9	5	4	[7]	[7]	A-1-a(0)	GM.
100	75	50	34	17	9	8	6	4	3	[7]	[7]	A-1-a(0)	GW-GM.
[10] 100	88	64	57	43	24	20	16	9	8	[7]	[7]	A-1-b(0)	SM.
[10] 100	80	65	52	37	26	25	21	15	11	21	7	A-2-4(0)	SM-SC.
100	98	93	87	73	59	57	54	46	40	44	15	A-7-6(7)	ML.
100	90	78	69	44	27	26	21	12	7	37	[7]	A-2-4(0)	SM.
------	100	99	95	80	68	67	65	59	51	67	32	A-7-5(18)	MH.
100	99	98	94	64	46	44	37	21	16	44	[7]	A-5(2)	SM.
------	100	98	95	77	42	40	36	30	28	25	8	A-4(1)	SC.
------	100	99	96	80	68	67	65	59	55	45	22	A-7-6(12)	CL.
------	------	--------	100	82	50	46	39	28	24	35	[7]	A-4(3)	SM.
------	100	99	94	77	57	56	53	43	42	32	15	A-6(6)	CL.
------	100	99	95	79	65	64	63	55	53	43	17	A-7-6(9)	ML-CL
100	98	97	92	71	51	48	43	35	30	36	11	A-6(4)	ML-CL.
100	99	93	86	69	45	42	35	29	25	27	8	A-4(2)	SC.
------	100	99	97	88	79	78	75	67	61	65	28	A-7-5(19)	MH.
------	100	98	90	67	47	45	40	31	29	[7]	[7]	A-4(2)	SM.
100	98	92	82	62	36	34	29	25	22	24	7	A-4(0)	SM-SC.
------	------	100	97	88	73	72	72	59	55	54	38	A-7-6(17)	CH.
100	99	93	87	69	43	40	33	25	22	[7]	[7]	A-4(2)	SM.

TABLE 12—*Engineering*

Soil name and location of sample	Parent material	Georgia report No.	Depth	Horizon	Moisture-density data [1]		Mechanical analysis [2]		
							Volume change [3]		
					Maximum dry density	Optimum moisture	Shrinkage	Swell	Total volume change
		S59 & 60Ga-147-	*In.*		*Lb. per cu. ft.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
0.7 mile NW. of Gratis and 3 miles NE. of Campton. (Clayey B2 horizon)	Granite, gneiss, and schist.	7-1	0 to 6	Ap	121	11	3.1	.1	3.2
		7-3	10 to 21	B2	91	28	9.6	4.3	13.9
		7-5	31 to 46	C	101	20	5.1	10.6	15.7
3 miles SW. of Monroe and 6.5 miles SE. of Between. (Thicker and less clayey B horizon)	Gneiss and schist	6-1	0 to 6	Ap	104	18	8.7	4.3	13.0
		6-3	12 to 28	B2	90	29	13.6	.6	14.2
		6-5	40 to 80+	C	99	20	4.6	16.7	21.3

[1] Based on Moisture-Density Relations of Soils Using a 5.5-lb. Rammer and a 12-in. Drop, AASHO Designation: T 99–57, Methods A and C (*2*).

[2] Mechanical analysis according to the AASHO Designation: T 88. Results by this procedure frequently differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for naming textural classes of soils.

[3] Based on A System of Soil Classification by W. F. Abercrombie: Proceedings, Highway Research Board, 1954 (*1*).

soils in the county is a suitable source of coarse and fine aggregate for concrete.

The ratings as a source of material for road fill are based primarily on suitability for use in construction of stable fill. Some consideration was given to presence of rocks and boulders, to depth to bedrock, and to presence of excess moisture.

The soil characteristics that were considered as being unfavorable to highway location are high water table, flooding, seepage, highly plastic soil material, shallowness to bedrock, boulders, unstable slope, and erodibility.

Some soils have features that make them unfavorable for use as reservoir sites and as sources of embankment material for construction of farm ponds. These unfavorable features, shown in table 14, should be carefully evaluated in selecting reservoir and embankment sites on such soils. Greater than normal water loss can be expected from reservoir sites located on soils that have rapid permeability and excess seepage. Soils that have moderate or slow permeability are generally suitable as reservoir sites. Stable embankments can usually be constructed with earth material that has moderate strength and stability. Care should be exercised if material of low strength and stability is used in embankments.

Agricultural drainage is needed, to some degree, on all first bottoms and on some of the upland and terrace soils. Soils that have moderate and moderately slow permeability can be drained satisfactorily if adequate outlets for drainage systems are available. A large part of the wet alluvial lands lacks outlets. Subsurface drainage is difficult on soils that have slow permeability.

Only those soils that are capable of sustained high yields are considered suitable for irrigation. A portable sprinkler system is the best means of irrigating in this county. Few sites, if any, are suitable for irrigation by other means.

Terraces and waterways for the control of erosion are generally suited to the cultivable uplands. Stones, shallowness, and irregular and steep topography are detrimental soil features. In addition, erodibility of the soil and difficulty in establishing vegetation interfere with the establishment of waterways. A seasonal high water table limits the use of equipment in shaping and seeding waterways. On slopes of more than 10 percent, terraces are hard to build and maintain. Close spacing and irregular alinement are necessary.

The characteristics considered detrimental to the use of the soils as drainage fields for septic tanks are slow permeability, low water-holding capacity, shallowness to bed-

test data—Continued

Mechanical analysis [2]—Continued										Liquid limit	Plasticity index	Classification	
Percentage passing sieve—[4]						Percentage smaller than—[4]							
3-in.	¾-in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.			AASHO [5]	Unified [6]
------	100	96	90	66	35	33	30	22	20	(7)	(7)	A–2–4(0)---	SM.
------	------	100	99	91	79	78	78	66	60	53	21	A–7–5(15)--	MH.
------	100	98	95	78	54	52	46	33	27	(7)	(7)	A–4(4)-----	ML.
100	99	98	94	86	61	58	52	45	40	32	12	A–6(6)-----	CL.
------	------	100	98	87	73	72	69	59	56	61	19	A–7–5(15)--	MH.
------	------	100	99	83	56	53	41	26	20	(7)	(7)	A–4(4)-----	ML.

[4] Based on sample as received in laboratory. Laboratory test data not corrected for amount discarded in field sampling.

[5] Based on Standard Specifications for Highway Materials and Methods of Sampling and Testing (Pt. 1, Ed. 8): The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes, AASHO Designation: M 145–49 (*2*).

[6] Based on Unified Soil Classification System, Technical Memorandum No. 3–357, v. 1, Waterways Expt. Sta., Corps of Engineers, March 1953 (*11*).

[7] Nonplastic.

[8] The values for these items were omitted due to the difference in test values between Georgia Highway Department Laboratory and Bureau of Public Roads Laboratory.

[9] Fragments coarser than 3 inches, estimated about 20 percent of the soil mass, were discarded in sampling and were not analyzed.

[10] Fragments coarser than 3 inches, estimated about 15 percent of the soil mass, were discarded in sampling and were not analyzed.

rock, poor surface and subsurface drainage, and a seasonal high water table.

General soil conditions affecting engineering

Numerous areas of stony soils and many outcrops of slightly weathered granite gneiss are in the southwestern part of the county. A large acreage of Louisburg soils that are shallow to bedrock is also in this part of the county. Both shallowness and stoniness influence the location and construction of roads and other engineering work that involves earthwork and excavating.

Earthwork can be performed on the well-drained soils in all seasons, except during prolonged wet periods. Excess moisture is detrimental to proper compaction. It is a problem during wet periods, which occur annually, usually late in winter and early in spring.

Frost action is of concern to engineers in the design and construction of roads, airports, foundations, retaining walls, and, to a lesser extent, cut and fill slopes. Frost action occurs when a frost-susceptible soil contains enough water for ice lenses to form and the temperature drops to freezing. Soils vary considerably in their susceptibility to frost. Sand and gravel that contain only a small amount of fine-grained material are affected only slightly, if at all. Clay is moderately susceptible; silt and fine silty sand are highly susceptible. Most soils in the county contain a large amount of fine-grained material and, therefore, are frost-susceptible to some degree. Subfreezing temperatures, however, usually are of short duration and cause only minor frost action. Subfreezing temperatures sufficient to cause considerable frost action on susceptible soils can be expected every 2 to 4 years.

Erosion of road shoulders, back slopes, and fill slopes is a problem unless a good vegetative cover is maintained.

Low natural fertility, a common characteristic of all soils in the county, makes it difficult to establish and maintain vegetation on road shoulders, cuts, fills, and waterways.

A more detailed description of a profile for each soil series is given in the section "Genesis, Morphology, and Classification of the Soils." This section also gives some information concerning the kinds of rocks that underlie the soils. Review of the section "General Soil Map" may help the reader to understand the physical features of the soils and the landscape.

TABLE 13.—*Brief description of the soils, and*

[See table 12 for test data on Cecil sandy clay loam, Chewacla silt loam, Lloyd

Map symbol	Soil	Brief description	Depth from surface
			Inches
Alm	Alluvial land (0 to 2 percent slopes).	Moderately well drained to wet, mixed alluvium on first bottoms; subject to flooding; soil materials are dominantly sandy loam, silt loam, and loamy sand. Depth to bedrock more than 5 feet. Seasonal high water table at depth of less than 1 foot.	0 to 36 [1]
Alp	Alluvial land, moderately wet (0 to 2 percent slopes).		
Avp	Alluvial land, wet (0 to 2 percent slopes).		
AkB	Altavista fine sandy loam, 2 to 6 percent slopes.	Moderately well drained soil developed in old alluvium on stream terraces; the uppermost 6 to 12 inches of fine sandy loam or sandy loam overlies about 2 feet of friable to firm sandy clay loam; beneath this is variable old alluvium. Depth to bedrock 15 feet or more. Seasonally high water table at depth of about 2 feet.	0 to 12 12 to 37 37 to 44+
AxA	Appling coarse sandy loam, 0 to 2 percent slopes.	Well-drained soils on uplands; formed in materials weathered from granite, gneiss, and coarse-grained schist; the uppermost 5 to 20 inches of coarse sandy loam or sandy clay loam overlies 2 to 3 feet of mottled, firm clayey material. Depth to bedrock 3 to 20 feet. Seasonal high water table at depth of more than 15 feet.	0 to 8 8 to 17 17 to 30 30 to 42
AxB	Appling coarse sandy loam, 2 to 6 percent slopes.		
AxB2	Appling coarse sandy loam, 2 to 6 percent slopes, eroded.		
AxC2	Appling coarse sandy loam, 6 to 10 percent slopes, eroded.		
AxD2	Appling coarse sandy loam, 10 to 15 percent slopes, eroded.		
AnB3	Appling sandy clay loam, 2 to 6 percent slopes, severely eroded.		
AnC3	Appling sandy clay loam, 6 to 10 percent slopes, severely eroded.		
AnD3	Appling sandy clay loam, 10 to 15 percent slopes, severely eroded.		
Afs	Augusta fine sandy loam (0 to 2 percent slopes).	Somewhat poorly drained soil developed in old alluvium on low stream terraces; the uppermost 7 to 14 inches of fine sandy loam and sandy loam overlies about 2 feet of friable sandy clay loam to firm sandy clay that is slowly permeable; beneath this is variable alluvium. Depth to bedrock more than 15 feet. Seasonal high water table at depth of less than 1 foot.	0 to 11 11 to 34 34 to 44+
CdB	Cecil coarse sandy loam, 2 to 6 percent slopes.	Well-drained soils on uplands; formed in materials weathered from gneiss, gneissoid schist, mica schist, and granite; the upper most 5 to 14 inches of coarse sandy loam or sandy clay loam overlies 2 to 4 feet of firm sandy clay loam to clay. Depth to bedrock 3 to 30 feet. Seasonal high water table at depth of more than 15 feet.	0 to 6 6 to 30 30 to 42+
CdB2	Cecil coarse sandy loam, 2 to 6 percent slopes, eroded.		
CdC2	Cecil coarse sandy loam, 6 to 10 percent slopes, eroded.		
CdD2	Cecil coarse sandy loam, 10 to 15 percent slopes, eroded.		
CdE2	Cecil coarse sandy loam, 15 to 25 percent slopes, eroded.		
CZB3	Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded.		
CZC3	Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded.		
CZD3	Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded.		
CZE3	Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded.		
CZC4	Cecil-Gullied land complex, 6 to 10 percent slopes.		
CZD4	Cecil-Gullied land complex, 10 to 15 percent slopes.		
Csl	Chewacla silt loam (0 to 2 percent slopes).	Somewhat poorly drained recent alluvium on first bottoms; subject to frequent flooding; the uppermost 6 to 15 inches of slightly sticky silt loam overlies 1 to 2 feet of mottled silty clay loam; beneath this is variable alluvium. Depth to bedrock more than 10 feet. Seasonal high water table at depth of less than 1 foot.	0 to 15 15 to 36+

See footnote at end of table.

their estimated physical properties

clay loam, Louisburg stony loamy coase sand, and Madison sandy clay loam]

Classification			Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
Dominant USDA texture	Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
						Inches per hour	*Inches per inch of soil*	*pH value*	
Sandy loam, silt loam, and loamy sand.	SM, ML	A–2, A–4	95 to 100	95 to 100	25 to 60	0.05 to 10.0	0. 14	4.5 to 5.5	Low.
Fine sandy loam	SM	A–2	95 to 100	95 to 100	25 to 35	5.0 to 10.0	. 12	5.6 to 6.0	Low.
Sandy clay loam	ML, CL	A–6, A–7	95 to 100	95 to 100	50 to 60	0.2 to 0.8	. 13	4.5 to 5.5	Moderate.
Sandy clay loam	SM, SC	A–4, A–6	95 to 100	95 to 100	35 to 50	0.2 to 0.8	. 10	4.5 to 5.0	Low to moderate.
Coarse sandy loam.	SM	A–2	95 to 100	90 to 100	20 to 35	5.0 to 10.0	. 12	4.5 to 5.0	Low.
Sandy clay loam	SC, CL	A–4	95 to 100	95 to 100	45 to 60	0.8 to 2.5	. 11	4.5 to 5.0	Moderate.
Clay	MH, ML, CL	A–7	95 to 100	95 to 100	60 to 75	0.2 to 0.8	. 13	4.5 to 5.0	Moderate to high.
Sandy clay loam	SM, SC, ML, CL.	A–4, A–6	95 to 100	95 to 100	40 to 60	0.2 to 0.8	. 11	4.0 to 4.5	Low to moderate.
Fine sandy loam	SM	A-2	95 to 100	95 to 100	25 to 35	2.5 to 5.0	. 12	4.5 to 5.0	Low.
Sandy clay loam or sandy clay.	MH, ML, CL	A–6, A–7	95 to 100	95 to 100	50 to 60	0.05 to 0.2	. 14	4.5 to 5.0	Moderate.
Sandy clay	MH, ML, CL	A–6, A–7	95 to 100	95 to 100	50 to 60	0.05 to 0.2	. 14	4.5 to 5.0	Moderate.
Coarse sandy loam.	SM	A–2, A–4	95 to 100	85 to 95	20 to 40	5.0 to 10.0	. 13	5.1 to 5.5	Low.
Sandy clay	MH, ML, CL	A–5, A–7	100	95 to 100	65 to 80	0.8 to 2.5	. 13	4.5 to 5.5	Moderate.
Sandy clay loam	MH, ML	A–5, A–7	100	95 to 100	50 to 70	0.8 to 2.5	. 13	4.5 to 5.0	Moderate.
Silt loam	ML, CL, SM, SC.	A–4, A–6	100	95 to 100	45 to 85	0.2 to 2.5	. 12	4.5 to 5.0	Low.
Silty clay loam	ML, CL, SM, SC.	A–4, A–6	100	95 to 100	35 to 55	0.2 to 2.5	. 14	4.5 to 5.0	Moderate.

TABLE 13.—*Brief description of the soils, and*

Map symbol	Soil	Brief description	Depth from surface
			Inches
CiB CiC2	Colfax sandy loam, 2 to 6 percent slopes. Colfax sandy loam, 6 to 10 percent slopes, eroded.	Somewhat poorly drained soils around the head of drainageways, in depressions, and at the base of slopes; formed in materials weathered from granite and gneiss; the uppermost 6 to 10 inches of sandy loam overlies about 2 feet of slightly plastic to plastic sandy clay or sandy clay loam that is slowly permeable. Depth to bedrock 4 to 20 feet. Seasonal high water table at depth of 0 to 5 feet.	0 to 8 8 to 26 26 to 36+
DgB2 DgC2 DpB3 DpC3 DpD3	Davidson loam, 2 to 6 percent slopes, eroded. Davidson loam, 6 to 10 percent slopes, eroded. Davidson clay, 2 to 6 percent slopes, severely eroded. Davidson clay, 6 to 10 percent slopes, severely eroded. Davidson clay, 10 to 15 percent slopes, severely eroded.	Well-drained soils on uplands; formed in materials weathered from basic rocks, such as diorite; the uppermost 5 to 8 inches of friable loam or clay overlies more than 2½ feet of firm clay loam to clay. Depth to bedrock 10 to 40 feet. Seasonal high water table at depth of more than 15 feet.	0 to 7 7 to 42+
DjA DjB	Durham loamy coarse sand, 0 to 2 percent slopes. Durham loamy coarse sand, 2 to 6 percent slopes.	Well-drained soils on uplands; formed in materials weathered from granite and coarse-grained gneiss; the uppermost 7 to 14 inches of loamy coarse sand and coarse sandy loam overlies 2 to 3 feet of sandy clay loam to sandy clay. Depth to bedrock 5 to 15 feet. Seasonal high water table at depth of more than 10 feet.	0 to 13 13 to 44 44 to 48+
LdB2 LdC2 LdD2 LdE2 LeB3 LeC3 LeD3 LeE3 LeF3 LgE LeC4 LeD4	Lloyd sandy loam, 2 to 6 percent slopes, eroded. Lloyd sandy loam, 6 to 10 percent slopes, eroded. Lloyd sandy loam, 10 to 15 percent slopes, eroded. Lloyd sandy loam, 15 to 25 percent slopes, eroded. Lloyd clay loam, 2 to 6 percent slopes, severely eroded. Lloyd clay loam, 6 to 10 percent slopes, severely eroded. Lloyd clay loam, 10 to 15 percent slopes, severely eroded. Lloyd clay loam, 15 to 25 percent slopes, severely eroded. Lloyd clay loam, 25 to 45 percent slopes, severely eroded. Lloyd stony loam, 10 to 25 percent slopes. Lloyd-Gullied land complex, 6 to 10 percent slopes. Lloyd-Gullied land complex, 10 to 15 percent slopes.	Well-drained soils on uplands; formed in materials weathered from diorite, granite, gneiss, and schist; the uppermost 5 to 10 inches of sandy loam, stony loam, or clay loam overlies 3 to 4 feet of friable sandy clay loam to firm clay. In the small areas of stony loam, about 40 percent of the surface is covered with stones from 10 to 15 inches in diameter. The subsoil also contains stones from 10 to 15 inches in diameter. Depth to bedrock 4 to 30 feet. Seasonal high water table at depth of more than 15 feet.	0 to 7 7 to 30 30 to 37 37 to 63+
Lcm	Local alluvial land (0 to 3 percent slopes).	Well-drained, recent, mixed local alluvium in depressions and at the head of drains; this alluvium is too recent to have distinct soil horizons and is dominantly sandy loam. Depth to bedrock more than 5 feet. Seasonal high water table at depth of about 2 feet.	0 to 36
LjF	Louisa fine sandy loam, 15 to 45 percent slopes.	Somewhat excessively drained soil on uplands; formed in materials weathered mainly from mica schist and mica gneiss; the uppermost 6 to 10 inches of fine sandy loam overlies a layer of fine sandy loam high in mica content; below this is micaceous schist. Depth to bedrock more than 10 feet. Seasonal high water table at depth of more than 15 feet.	0 to 6 6 to 33+

their estimated physical properties—Continued

Classification			Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
Dominant USDA texture	Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
						Inches per hour	*Inches per inch of soil*	*pH value*	
Sandy loam	SM, SC	A-2, A-4	100	95 to 100	25 to 45	2.5 to 10.0	.11	4.5 to 5.0	Low.
Sandy clay	ML, CL, MH	A-7	100	100	50 to 60	0.05 to 0.2	.12	4.5 to 5.0	Moderate.
Sandy clay loam	ML, MH, CL	A-6, A-7	100	100	50 to 60	0.05 to 0.2	.12	4.5 to 5.0	Moderate.
Loam	ML, CL	A-4	95 to 100	95 to 100	50 to 65	2.5 to 5.0	.10	4.5 to 5.0	Moderate.
Clay loam or clay.	MH, ML	A-7	100	95 to 100	65 to 85	0.8 to 2.5	.10	4.5 to 5.0	Moderate.
Loamy coarse sand.	SM	A-2	95 to 100	95 to 100	20 to 30	5.0 to 10.0	.12	5.6 to 6.0	Low.
Sandy clay loam or sandy clay.	ML, CL, MH	A-7	100	100	50 to 60	0.8 to 2.5	.13	4.5 to 6.0	Moderate.
Sandy clay loam	SM, SC, ML, CL.	A-4	100	100	40 to 60	2.5 to 5.0	.12	4.5 to 5.0	Moderate to low.
Sandy loam	SM	A-2, A-4	95 to 100	85 to 100	20 to 40	2.5 to 5.0	.13	5.1 to 5.5	Low.
Silty clay	MH, ML, CL	A-7	95 to 100	95 to 100	65 to 80	0.8 to 2.5	.13	5.1 to 5.5	Moderate.
Sandy clay loam	ML, CL	A-6, A-7	95 to 100	95 to 100	50 to 60	0.8 to 2.5	.13	5.1 to 5.5	Moderate to low.
Sandy loam	SM, ML, CL	A-2, A-4	95 to 100	95 to 100	30 to 60	2.5 to 5.0	.13	4.5 to 5.0	Low.
Sandy loam	SM	A-2, A-4	95 to 100	95 to 100	20 to 40	0.8 to 2.5	.15	5.1 to 6.0	Low.
Fine sandy loam	SM, ML	A-4	90 to 100	75 to 95	40 to 55	2.5 to 5.0	.08	4.5 to 5.0	Low.
Fine sandy loam	SM, ML	A-4	80 to 95	60 to 85	40 to 55	2.5 to 5.0	.08	4.5 to 5.0	Low.

TABLE 13.—*Brief description of the soils, and*

Map symbol	Soil	Brief description	Depth from surface
			Inches
LCB	Louisburg loamy coarse sand, 2 to 6 percent slopes.	Somewhat excessively drained soils on uplands; formed in materials weathered from granite and gneiss with some influence from quartzite in places; the uppermost 33 inches of loamy coarse sand or stony loamy coarse sand overlies horizontal bedded granite and gneiss that are only slightly weathered. In some areas there is a thin layer of sandy clay loam or sandy clay in the profile. In the stony areas, stones from 10 to 15 inches or more in diameter are scattered throughout the profile and cover about 40 percent of the surface. Depth to bedrock 1 to 4 feet. Seasonal high water table at depth of more than 15 feet.	0 to 33
LCC	Louisburg loamy coarse sand, 6 to 10 percent slopes.		33+
LCD	Louisburg loamy coarse sand, 10 to 15 percent slopes.		
LCE2	Louisburg loamy coarse sand, 15 to 25 percent slopes, eroded.		
LDC	Louisburg stony loamy coarse sand, 6 to 10 percent slopes.		
LDE	Louisburg stony loamy coarse sand, 10 to 25 percent slopes.		
LDF	Louisburg stony loamy coarse sand, 25 to 45 percent slopes.		
MIB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded.	Well-drained upland soils formed in materials weathered from mica schist, quartz mica schist, and granitoid gneiss; the uppermost 5 to 8 inches of sandy clay loam overlies about 2 feet of firm silty clay loam or silty clay high in mica content; beneath this is a thick layer of partly weathered parent rock. Depth to bedrock 4 to 30 feet. Seasonal high water table at depth of more than 15 feet.	0 to 7
MIC3	Madison sandy clay loam, 6 to 10 per-slopes, severely eroded.		7 to 30
MID3	Madison sandy clay loam, 10 to 15 percent slopes, severely eroded.		30 to 77+
MIE3	Madison sandy clay loam, 15 to 25 percent slopes, severely eroded.		
Wea	Wehadkee silt loam (0 to 2 percent slopes).	Poorly drained, slowly permeable recent alluvium on first bottoms; subject to frequent flooding; the uppermost 8 to 22 inches of silt loam overlies about 2 feet of silty clay loam. Depth to bedrock more than 10 feet. Seasonal high water table at depth of less than 1 foot.	0 to 21 21 to 44+
WgB2	Wickham fine sandy loam, 2 to 6 percent slopes, eroded.	Well-drained soil developed in old alluvium on stream terraces; the uppermost 5 to 8 inches of fine sandy loam overlies about 2 feet of sandy clay loam to clay loam; beneath this is mottled, firm sandy clay loam. Depth to bedrock more than 20 feet. Seasonal high water table at depth of more than 10 feet.	0 to 6 6 to 29 29 to 42+
WmB	Worsham soils 2 to 6 percent slopes.	Poorly drained soils in depressions, along the base of slopes, and near the head of drains; formed in materials weathered from light-colored granite and gneiss; the uppermost 5 to 10 inches of sandy loam, coarse sandy loam, or silt loam overlies about 2½ feet of sticky sandy clay loam to plastic clay that is slowly permeable. Depth to bedrock 3 to 8 feet. Seasonal high water table at depth of less than 1 foot.	0 to 8 8 to 36+

[1] Ratings are for Alluvial land (Alm).

their estimated physical properties—Continued

Classification			Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
Dominant USDA texture	Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074mm.)				
						Inches per hour	*Inches per inch of soil*	*pH value*	
Loamy coarse sand. Partly disintegrated parent rock.	GM, SM	A-1, A-2	50 to 100	35 to 95	10 to 30	5.0 to 10.0	.08	5.1 to 5.5	Low.
Sandy clay loam.	SM, SC, CL	A-4, A-6	95 to 100	80 to 95	35 to 60	0.8 to 2.5	.12	4.5 to 5.0	Moderate.
Silty clay loam or silty clay.	MH, CH	A-7	100	95 to 100	70 to 85	0.8 to 2.5	.13	4.5 to 5.5	Moderate to high.
Partly weathered mica schist.	SM, ML	A-4, A-6	90 to 100	85 to 100	40 to 60	2.5 to 5.0	.10	4.0 to 4.5	Low.
Silt loam	ML, CL	A-4, A-6	100	100	60 to 75	0.05 to 0.2	.11	4.5 to 6.0	Moderate.
Silty clay loam	ML, CL	A-6, A-7	100	100	80 to 90	0.05 to 0.2	.12	4.5 to 5.0	Moderate.
Fine sandy loam	SM	A-2	95 to 100	95 to 100	25 to 35	2.5 to 10.0	.13	4.5 to 5.0	Low.
Sandy clay loam	ML, CL	A-6, A-7	95 to 100	95 to 100	50 to 60	0.8 to 2.5	.13	4.5 to 5.0	Moderate.
Sandy clay loam	ML, CL	A-6, A-7	95 to 100	95 to 100	50 to 60	0.8 to 2.5	.13	4.5 to 5.0	Moderate.
Sandy loam	SM	A-2, A-4	100	95 to 100	20 to 45	0.8 to 2.5	.11	4.5 to 5.0	Low.
Sandy clay or clay.	MH, CH	A-7	100	100	55 to 85	0.05 to 0.2	.12	4.5 to 5.0	Moderate to high.

TABLE 14.—*Engineering*

Soil series and map symbols	Suitability as source of—			Soil features affecting [1]—		
	Topsoil	Sand	Road fill	Highway location	Farm ponds	
					Reservoir area	Embankment
Alluvial land (Alm).	Good	Poor to good	Fair to good	Seasonal high water table at a depth of less than 1 foot; subject to flooding.	Moderate to rapid permeability.	Poorly graded material in some areas.
Alluvial land, moderately wet. (Alp).	Good	Poor to fair	Fair to good	Seasonal high water table at a depth of less than 1 foot; subject to flooding.	Moderate to rapid permeability.	Poorly graded material in some areas.
Alluvial land, wet (Avp).	Poor; excess moisture.	Poor to fair; excess moisture.	Poor to fair; excess moisture.	Seasonal high water table at a depth of less than 1 foot; subject to flooding.	Soil properties are favorable.	Poorly graded material in some areas.
Altavista (AkB).	Good in surface layer.	Good in surface layer.	Good	Seasonal high water table at a depth of about 2 feet.	Soil properties are favorable.	Moderate strength and stability.
Appling (AxA, AxB, AxB2, AxC2, AxD2, AnB3, AnC3, AnD3).	Good in surface layer, except where severely eroded.	Good in surface layer except where severely eroded; poor to fair below.	Good	Shallow to bedrock in places.	Soil properties are favorable.	Moderate strength and stability.
Augusta (Afs).	Fair in surface layer; high water table.	Fair in surface layer.	Poor	Seasonal high water table at a depth of less than 1 foot.	Soil properties are favorable.	Moderate strength and stability.
Cecil (CdB, CdB2, CdC2, CdD2, CdE2, CZB3, CZC3, CZC4, CZD3, CZD4, CZE3).	Good in surface layer, except where severely eroded.	Fair in surface layer, except where severely eroded.	Fair	Slopes easily eroded in deep cuts.	Soil properties are favorable.	Moderate strength and stability.
Chewacla (Csl).	Good	Poor	Fair, except in places that have high water table.	Seasonal high water table at a depth of less than 1 foot; subject to flooding.	Soil properties are favorable.	Moderate strength and stability; generally high moisture content.
Colfax (CiB, CiC2).	Good in surface layer.	Fair in surface layer.	Poor to fair	Seasonal high water table at a depth of 0 to 5 feet.	Soil properties are favorable.	Generally high moisture content.
Davidson (DgB2, DgC2, DpB3, DpC3, DpD3).	Poor	Unsuitable	Fair	Slopes easily eroded in deep cuts.	Soil properties are favorable.	Moderate strength and stability.

See footnote at end of table.

interpretations

Soil features affecting [1]—Continued				
Agricultural drainage	Irrigation	Terraces	Waterways	Septic tank drainage fields
Seasonal high water table at a depth of less than 1 foot; needs simple surface drainage. Subsurface drainage satisfactory with adequate outlets.	Soil properties are favorable.	Terraces not needed; soil is level or nearly level.	Soil properties are favorable.	Seasonal high water table at a depth of less than 1 foot; subject to flooding.
Seasonal high water table at a depth of less than 1 foot; needs surface and subsurface drainage.	Somewhat poor drainage; seasonal high water table at a depth of less than 1 foot.	Terraces not needed; soil is level or nearly level.	Seasonal high water table at a depth of less than 1 foot.	Somewhat poor drainage; seasonal high water table at a depth of less than 1 foot; subject to flooding.
Moderate to slow permeability; seasonal high water table at a depth of less than 1 foot; needs surface and subsurface drainage.	Poor drainage; seasonal high water table at a depth of less than 1 foot.	Terraces not needed; soil is level or nearly level.	Seasonal high water table at a depth of less than 1 foot; poor drainage.	Poor drainage; seasonal high water table at a depth of less than 1 foot; subject to flooding.
Drainage not needed	Moderately slow permeability.	Soil properties are favorable.	Soil properties are favorable.	Moderately slow permeability; seasonal high water table at a depth of about 2 feet.
Drainage not needed	Moderately slow permeability; slow intake rate in severely eroded areas.	Soil properties are favorable where slope is less than 10 percent; steeper slopes unsuitable.	High erodibility	Moderately slow permeability.
Slow permeability; seasonal high water table at a depth of less than 1 foot; needs surface and subsurface drainage.	Somewhat poor drainage; seasonal high water table at a depth of less than 1 foot; slow permeability.	Terraces not needed; soil is level or nearly level.	Seasonal high water table at a depth of less than 1 foot.	Seasonal high water table at a depth of less than 1 foot; slow permeability.
Drainage not needed	Slow intake rate in severely eroded areas.	Soil properties are favorable where slope is less than 10 percent; steeper slopes unsuitable.	High erodibility	Soil properties are favorable.
Moderate to moderately slow permeability; seasonal high water table at a depth of less than 1 foot; needs surface and subsurface drainage.	Somewhat poor drainage; seasonal high water table at a depth of less than 1 foot.	Terraces not needed; soil is level or nearly level.	Seasonal high water table at a depth of less than 1 foot.	Somewhat poor drainage; seasonal high water table at a depth of less than 1 foot; subject to flooding.
Slow permeability; seasonal high water table at a depth of 0 to 5 feet; needs surface and subsurface drainage.	Somewhat poor drainage; slow permeability.	Terraces generally not feasible; areas are small and irregular.	Soil properties are favorable.	Somewhat poor drainage; seasonal high water table at a depth of 0 to 5 feet; slow permeability.
Drainage not needed	Slow intake rate in severely eroded areas.	Soil properties are favorable where slope is less than 10 percent; steeper slopes unsuitable.	High erodibility	Soil properties are favorable.

TABLE 14.—*Engineering*

Soil series and map symbols	Suitability as source of—			Soil features affecting [1]—		
	Topsoil	Sand	Road fill	Highway location	Farm ponds	
					Reservoir area	Embankment
Durham (DjA, DjB).	Good	Good in surface layer.	Good in surface layer; fair below.	Soil properties are favorable.	Soil properties are favorable.	Moderate strength and stability.
Lloyd (LdB2, LdC2, LdD2, LdE2, LeB3, LeC3, LeC4, LeD3, LeD4, LeE3, LeF3, LgE).	Fair in surface layer, except where severely eroded.	Fair in surface layer, except where severely eroded.	Fair to good	Slopes easily eroded in deep cuts; shallow to bedrock in places.	Soil properties are favorable.	Moderate strength and stability.
Local alluvial land (Lcm).	Good	Fair	Good	Seasonal high water table at a depth of about 2 feet.	Soil properties are favorable.	Moderate strength and stability.
Louisa (LjF).	Good	Poor	Fair; erodible	Slopes easily eroded.	Moderately rapid permeability; excessive seepage likely where cuts reach into parent material.	Low strength and stability.
Louisburg (LCB, LCC, LCD, LCE2, LDC, LDE, LDF).	Good, except in stony areas.	Good, except in stony areas.	Good, except where shallow to bedrock.	13 to 48 inches to bedrock.	Rapid permeability and seepage.	Moderate strength and stability; shallowness to bedrock; some areas stony.
Madison (MlB3, MlC3, MlD3, MlE3).	Poor	Unsuitable	Fair to good	Slopes easily eroded in deep cuts.	Soil properties are favorable.	Moderate strength and stability.
Wehadkee (Wea).	Poor	Unsuitable	Poor; excess moisture.	Seasonal high water table at a depth of less than 1 foot; subject to flooding.	Soil properties are favorable.	Low strength and stability; generally high moisture content.
Wickham (WgB2).	Good	Good in surface layer.	Fair to good	Slopes easily eroded in deep cuts.	Soil properties are favorable.	Moderate strength and stability.
Worsham (WmB).	Unsuitable	Unsuitable	Poor	Seasonal high water table at a depth of less than 1 foot; shallow to bedrock in places.	Soil properties are favorable.	Moderate strength and stability; high moisture content.

[1] Only detrimental or undesirable features are recorded. In instances where no undesirable features exist, the statement "Soil properties are favorable" appears in place of features.

interpretations—Continued

Soil features affecting [1]—Continued				
Agricultural drainage	Irrigation	Terraces	Waterways	Septic tank drainage fields
Drainage not needed	Soil properties are favorable.	Soil properties are favorable.	Soil properties are favorable.	Soil properties are favorable.
Drainage not needed	Slow intake rate in severely eroded areas.	Soil properties are favorable where slope is less than 10 percent; steeper slopes unsuitable.	High erodibility	Soil properties are favorable.
Drainage not needed	Soil properties are favorable.	Terraces generally not feasible; small irregular areas.	Soil properties are favorable.	Seasonal high water table at a depth of about 2 feet.
Drainage not needed	Low water-holding capacity; strong to steep slopes.	Terraces not suitable; steep slopes.	Low available water capacity; high erodibility; steep slopes.	Low water-holding capacity; 15 to 45 percent slopes.
Drainage not needed	Low water-holding capacity; shallowness to bedrock; poorly suited to agricultural use.	Terraces not suitable in stony or shallow areas, or where slope is more than 10 percent.	Low available water capacity; 13 to 48 inches to bedrock; stony throughout profile in some areas.	Low water-holding capacity; 13 to 48 inches to bedrock; 15 to 45 percent slopes in some areas.
Drainage not needed	Slow intake rate	Soil properties are favorable where slope is less than 10 percent; steeper slopes unsuitable.	High erodibility	Soil properties are favorable.
Slow permeability; seasonal high water table at a depth of less than 1 foot; needs surface and subsurface drainage.	Poor drainage; seasonal high water table at a depth of less than 1 foot; slow intake rate; slow permeability.	Terraces not needed; soil is level or nearly level.	Poor drainage; seasonal high water table at a depth of less than 1 foot.	Poor drainage; seasonal high water table at a depth of less than 1 foot; subject to flooding.
Drainage not needed	Soil properties are favorable.	Soil properties are favorable.	Soil properties are favorable.	Soil properties are favorable.
Slow permeability; seasonal high water table at a depth of less than 1 foot; needs surface and subsurface drainage; subsurface drainage difficult.	Irrigation not feasible; poor drainage; poorly suited to agricultural use.	Terraces not needed; soil is unsuitable for row crops.	Poor drainage; seasonal high water table at a depth of less than 1 foot.	Slow permeability; seasonal high water table at a depth of less than 1 foot; poor drainage.

Genesis, Morphology, and Classification of the Soils

Soil is the product of parent material, topography, time, living organisms, and climate. The nature of the soil at any given place depends on the combination of these five major factors at that particular place. These five factors have had an effect on the genesis of every soil in Walton County and on every soil throughout the world.

The relative importance of the factors differs from place to place; sometimes one factor has more effect on the formation of a soil and sometimes another. In extreme cases one factor may dominate and determine most of the soil properties, as is common when the parent material is pure quartz sand, which is highly resistant to change. Soils derived from pure quartz sand commonly have faint horizons, but a distinct profile can form under certain vegetation, if the topography is low and flat and the water table is high. Thus, for every soil, the past combination of the five major factors is of first importance to its present character.

Genesis of the Soils

In the following pages, the five factors that affect soil formation—parent material, topography, time, living organisms, and climate—are discussed.

Parent material

Parent material is the unconsolidated mass from which soil develops. It is largely responsible for the chemical and mineralogical composition of a soil. Most soils in Walton County formed in place from residual material, that is, material that weathered from underlying rock. Table 15 lists the kinds of rock from which the parent material of each soil series was derived.

According to the Geologic Map of Georgia (*4*), biotite gneiss and schist, which includes injected gneiss, underlie about 60 percent of the county, and granite gneiss (Lithonia type), which includes diorite injected gneiss, underlies about 40 percent. Outcrops of granite gneiss that is only slightly weathered are prominent throughout an area of about 2,000 acres.

Soils formed in alluvium make up about 12 percent of the county. Less than 1 percent of this acreage consists of soils formed in old alluvium, and slightly less than 12 percent, of soils formed in young alluvium. All of the alluvium originated from rock in the nearby uplands. Alluvial soils are mainly along rivers and larger streams. Those on first bottoms show little profile development and are still receiving alluvial deposits; whereas, those on old high terraces have been in place long enough to have distinctly developed horizons.

Topography

Topography depends largely on the nature of the bedrock, on the area's geologic history, and on the dissection by streams. It influences soil formation through its effect on drainage, erosion, temperature, and plant cover.

The slope range in Walton County is 0 to about 45 percent. Soils on uplands where the slope is less than 15 percent are generally deeper and have more distinct horizons than soils in areas where the slope is stronger. Where the slope is between 15 and 45 percent, geologic erosion removes the soil material almost as fast as it forms. Louisburg and Louisa soils, for example, have strong slopes and a thin solum.

The top of Alcovy Mountain, southwest of Monroe, is more than 1,100 feet above sea level and is the highest point in the county. The lowest point is near the Newton County line between Big Flat Creek and the Alcovy River. That point is about 650 feet above sea level and about 450 feet below the highest point.

The differences in elevation and the many branching drainageways contribute to the favorable drainage conditions that prevail throughout most of the county. Excess water runs into channels and flows away rapidly.

Time

The length of time required for the development of a mature soil with easily recognized A and B horizons depends largely on the other genetic factors. Generally, a soil develops in less time in a humid, warm area where vegetation is rank than in a dry or cold area where vegetation is scant. Also, the time required for development is less if the parent material is coarse textured rather than fine textured, other factors being equal.

Generally, older soils have more distinct horizons than younger ones do. Slope can alter the effect of time. For example, soils on nearly level uplands and on old stream terraces have developed to maturity; but soils of the same age on strong slopes have had little chance to develop, because geologic erosion has removed soil material so rapidly that the solum remains shallow. On first bottoms and in areas of local alluvium, soil material has been in place too short a time to allow distinct horizons to develop.

Living organisms

The kinds and numbers of plants and animals that live on and in the soil are governed in large part by the climate and are affected to varying degrees by the parent material, the topography, and the age of the soil.

Each cubic foot of soil contains millions of microorganisms, insects, small plants, and small animals, which exert a continuous effect on physical and chemical properties of the soil. Bacteria, fungi, and other micro-organisms, all more numerous by far in the uppermost few inches, speed the weathering of rock and the decomposition of organic matter. Earthworms and other small invertebrates carry on a slow but continuous cycle of soil mixing. Soil ingested by earthworms is altered chemically.

Plants return organic matter to the soil. They also transfer elements from the subsoil to the surface soil by absorbing these elements into their tissue and then depositing the tissue on the surface in the form of fallen fruit, leaves, or stems. Soil material and elements from the subsoil are also brought to the surface when trees are uprooted.

The natural complex of living organisms affecting soil genesis can be drastically changed by man's activities, including clearing the forests, cultivating the soils, and introducing new plants. Except for a decrease in organic-matter content and a loss of surface soil through erosion in cultivated areas, the effects of man's activities are not yet visible, and some probably will not be evident for centuries.

Climate

Climate, as a genetic factor, affects the soil physically, chemically, and biologically, primarily through the influence of precipitation and temperature. Water dissolves minerals, supports biological activity, and transports mineral and organic residues through the soil profile. The amount of water that filters through the soil at a given point depends on rainfall, relative humidity, length of the frost-free period, soil permeability, and relief. Temperature influences the kinds and growth of organisms and the speed of physical and chemical reactions in the soil.

The climate of Walton County is of the humid, warm-temperate, continental type characteristic of the southeastern part of the United States. In this climate, the soils are moist much of the time from November 15 through July 31 and are moderately dry much of the time from August 1 through November 14. The surface soil is frozen to a depth of 1 to 3 inches for only a few days during the year. Table 1, on page 2, gives the average temperature and the distribution of rainfall by month.

The climate has not caused differences among the soils, because it is nearly uniform throughout the county. As can be expected in a climate of this type, most of the soils are highly weathered, leached, strongly acid to very strongly acid, and low in fertility.

Morphology and Classification of the Soils

The soil classification system used in the United States (*7*) consists of six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great soil group, the family, the series, and the type.

There are three orders—zonal, intrazonal, and azonal—and thousands of types. The suborder and family categories have never been fully developed and thus have been little used. Attention has been directed largely toward great soil groups, series, and types.

The zonal order consists of soils that have evident, genetically related horizons reflecting the predominant influence of climate and living organisms in their formation. In Walton County, the zonal order is represented by the Red-Yellow Podzolic and the Reddish-Brown Lateritic great soil groups. Soils of the Red-Yellow Podzolic group make up nearly 80 percent of the county.

The intrazonal order includes soils that have more or less evident, genetically related horizons reflecting the dominant influence of a local factor of topography or parent material over the normal effects of climate and living organisms. In this county, the intrazonal order is represented by the Low-Humic Gley great soil group.

The azonal order consists of soils that lack distinct, genetically related horizons because of their youth, or because of the resistance of parent material to the soil-forming process. This order is represented in the county by Alluvial soils and by Lithosols.

Table 15 lists the soil series by order and great soil group and gives some characteristics of each series.

The great soil groups represented in Walton County are discussed in the following pages. The discussion includes a detailed profile description of a representative soil of each soil series in the county.

Red-Yellow Podzolic soils

The Red-Yellow Podzolic great soil group is in the zonal order and consists of well-developed, well-drained, acid soils that have a thin organic A0 horizon and an organic-mineral A1 horizon. The A1 horizon is underlain by a light-colored, bleached A2 horizon that overlies a red, yellowish-red, or yellow, more clayey B2 horizon. The parent material is more or less siliceous. Coarse, reticulate streaks or mottles of red, brown, and light gray are characteristic of the deep horizons where the parent material is thick (*5*). Kaolinite is the dominant clay mineral. The cation-exchange capacity is low, and the percentage of base saturation is very low.

Generally, Red-Yellow Podzolic soils in Walton County have a cation-exchange capacity of less than 20 milliequivalents per 100 grams of soil and a base saturation of between 5 and 30 percent. The subsoil has a moderate, angular or subangular blocky structure and colors of high chroma. All except the Augusta and Colfax soils have a high chroma in the B2 layer.

Soils in Walton County that fit the central concept of the Red-Yellow Podzolic group, namely, Altavista, Appling, Cecil, Durham, Madison, and Wickham soils, originally had a thin, dark-colored A1 horizon and a well-defined A2 horizon. Plowing and erosion have disturbed these horizons, and now the surface layer consists of a mixture of material from the original A1 and A2 horizons, or a mixture of material from the A2 and B horizons, or material predominantly from the B horizon. In most areas that are not severely eroded, the surface layer is strongly acid to very strongly acid, granular coarse sandy loam or loamy coarse sand to sandy loam. The B2 horizon has moderate, medium, angular and subangular blocky structure. Generally, it contains from 2 to 6 times as much clay as the A horizon and nearly twice as much clay as the C horizon. This last characteristic is not common to certain Red-Yellow Podzolic soils in some other parts of the country. Clay films are common to prominent in the B2 horizon. The C horizon has weaker structure than the B horizon; it is more mottled and variable in color, and, as a rule, it is more strongly acid.

The B2 horizon of Cecil, Madison, and Wickham soils is yellowish red (5YR) or red to dark red (2.5YR) and of high chroma (6 or more). The structure in the B2 horizon is moderate, medium, angular and subangular blocky. Madison soils are more micaceous than Cecil and Wickham soils. Wickham soils are more friable and less red than Cecil and Madison soils.

Appling, Altavista, and Durham soils are distinguished from Cecil, Madison, and Wickham soils by a less red profile. The B horizon of Appling soils is predominantly mottled red, yellowish red, and olive yellow below a depth of about 17 inches. The entire B horizon of Durham soils is light olive brown or light yellowish brown; it has red and yellowish-brown mottles at a depth of about 23 inches. The B horizon of Altavista soils is predominantly olive yellow and light yellowish brown; it has red mottles at a depth of about 18 inches.

Lloyd soils belong to the Red-Yellow Podzolic group but have some characteristics, especially low contrast between the A1 and A2 horizons, of Reddish-Brown Later-

TABLE 15.—*Classification of soils by order, great soil group, and*

Order, great soil group, and series	Brief description [1]
ZONAL ORDER	
Red-Yellow Podzolic soils—	
Central concept:	
Altavista	Light olive-brown to light yellowish-brown fine sandy loam over a thin layer of light yellowish-brown to olive-yellow sandy loam; B horizon is strong-brown to olive-yellow sandy clay loam; commonly mottled at a depth of about 18 inches.
Appling	Light brownish-gray, light olive-brown, or light yellowish-brown coarse sandy loam over yellowish-brown, friable sandy clay loam; mottled, red, yellowish-red, and olive-yellow clayey material at a depth of about 17 inches.
Cecil	Light yellowish-brown to brown coarse sandy loam grading to yellowish-red to red sandy clay to clay at a depth of about 10 inches.
Durham	Olive-gray, pale-olive, light brownish-gray to light yellowish-brown loamy coarse sand over a thin layer of light yellowish-brown coarse sandy loam; B horizon is light olive-brown to light yellowish-brown sandy clay loam in the uppermost part and sandy clay in the lower part; commonly mottled at a depth of about 23 inches.
Madison	Reddish-brown to yellowish-red sandy clay loam over dark reddish-brown, red, or dark-red, micaceous clay loam to clay.
Wickham	Yellowish-brown to dark reddish-brown fine sandy loam over yellowish-red, red, or strong-brown clay loam to sandy clay loam; commonly mottled at a depth of about 29 inches.
Grading toward Reddish-Brown Lateritic:	
Lloyd	Reddish-brown to dark reddish-brown sandy loam or stony loam that grades to reddish-brown to dark-red clay loam to clay at a depth of about 14 inches.
Grading toward Low-Humic Gley:	
Augusta	Light olive-brown to dark grayish-brown fine sandy loam over a thin layer of pale-yellow sandy loam; B horizon is mottled pale-yellow and light-gray sandy clay loam to sandy clay.
Colfax	Light yellowish-brown, yellowish-brown, light olive-brown, or light-gray sandy loam over yellow and olive sandy clay loam to sandy clay; mottled at a depth of about 12 inches.
Reddish-Brown Lateritic soils—	
Central concept:	
Davidson	Dark reddish-brown loam over dusky-red to dark-red clay loam to clay
INTRAZONAL ORDER	
Low-Humic Gley Soils—	
Central concept:	
Wehadkee	Mottled, grayish-brown silt loam over mottled gray silty clay loam
Worsham	Mottled sandy loam, coarse sandy loam, or silt loam over mottled light-gray sandy clay loam to clay.
AZONAL ORDER	
Alluvial soils—	
Grading toward Low-Humic Gley:	
Chewacla	Brown to reddish-brown silt loam over mottled gray silt loam or silty clay loam
Lithosols—	
Central concept:	
Louisa	Grayish-brown, brown, or dark grayish-brown fine sandy loam over yellowish-brown to strong-brown fine sandy loam or gravelly fine sandy loam that contains much mica.
Louisburg	Light-gray loamy coarse sand or stony loamy coarse sand over light yellowish-brown loamy coarse sand.

[1] The profiles described, except that of the Madison soil, are of soils not greatly affected by accelerated erosion. All Madison soil types mapped in the county are severely eroded.

series; brief description of soils; and significant characteristics of soils

Position	Drainage class	Slope range	Parent material	Degree of profile development [2]
		Percent		
Low stream terraces	Moderately well drained	2 to 6	Old alluvium	Medium.
Upland slopes and ridges	Well drained	0 to 15	Material weathered from granite, gneiss, and coarse-grained schist.	Strong.
Upland slopes and ridges	Well drained	2 to 25	Material weathered from gneiss, gneissoid schist, mica schist, and granite.	Strong.
Upland slopes and ridges	Well drained	0 to 6	Material weathered from granite and coarse-grained gneiss.	Strong.
Upland slopes and ridges	Well drained	2 to 25	Material weathered from quartz mica schist, mica schist, and granite gneiss.	Strong.
Stream terraces	Well drained	2 to 6	Old alluvium	Strong.
Upland slopes and ridges	Well drained	2 to 45	Material weathered from diorite, granite, gneiss, and schist.	Strong.
Low stream terraces	Somewhat poorly drained	0 to 2	Old alluvium	Medium.
Around the head of drainageways, in depressions, and at the base of slopes.	Somewhat poorly drained	2 to 10	Material weathered from light-colored granite and gneiss.	Medium.
Upland slopes and ridges	Well drained	2 to 15	Material weathered from diorite and other basic rocks.	Strong.
First bottoms	Poorly drained	0 to 2	Recent alluvium	Weak.
Near the head of drainageways, in depressions, and at the base of slopes.	Poorly drained	2 to 6	Material weathered from light-colored granite and gneiss.	Medium.
First bottoms	Somewhat poorly drained	0 to 2	Recent alluvium	Weak.
Upland slopes	Somewhat excessively drained	15 to 45	Material weathered from mica schist and mica gneiss.	Weak.
Upland slopes and ridges	Somewhat excessively drained	2 to 45	Material weathered from granite and gneiss, and, to a limited extent, quartzite.	Weak.

[2] The degree of profile development is measured by the number of important genetic horizons and the degree of contrast between them.

itic soils. In color, structure, and clay content, the subsoil is like that of the reddest of Red-Yellow Podzolic soils; the color is identical to that of the subsoil of Reddish-Brown Lateritic soils. The parent material of Lloyd soils is less micaceous than that of Red-Yellow Podzolic soils in general.

Augusta and Colfax soils belong to the Red-Yellow Podzolic group but have some characteristics of Low-Humic Gley soils. The B horizon of Colfax soils is mottled—the upper part is predominantly yellow with a few red mottles; the B22g is predominantly pale olive with light-gray, pale-red, and yellowish-brown mottles; the lower part of the B horizon is usually yellowish brown, pale red, olive yellow, and gray. In Augusta soils, the B1 horizon is predominantly pale yellow with a few olive-yellow mottles, and the B2 is light gray with many yellow mottles. Both of these soils are gleyed below a depth of about 18 inches.

Augusta and Colfax soils have very weak color characteristics in the B horizon. Colfax soils have many gray mottles in the B2 and B3 horizons; and Augusta soils have a light-gray B2 horizon. In both soils, the B2 horizon is firm sandy clay when moist and slightly plastic to plastic when wet. The gradation is too diffuse to be characteristic of Planosols. Augusta soils developed in alluvium on low stream terraces, whereas Colfax soils developed in residuum on uplands.

A detailed profile description of a representative soil of each soil series belonging to the Red-Yellow Podzolic great soil group follows.

Altavista fine sandy loam, 2 to 6 percent slopes, 100 feet south of paved road near Shoals Creek, 1 mile south of Gratis:

Ap—0 to 8 inches, light olive-brown (2.5Y 5/4) fine sandy loam; weak, fine, granular structure; very friable; many medium and fine roots; few fine quartz pebbles; medium acid; abrupt, wavy boundary.

A3—8 to 12 inches, light yellowish-brown (2.5Y 6/4) to olive-yellow (2.5Y 6/6) sandy loam; weak, fine, angular blocky structure; friable; few fine roots; few fine quartz pebbles; medium acid; clear, wavy boundary.

B1—12 to 18 inches, olive-yellow (2.5Y 6/6) light sandy clay loam; weak, fine, angular blocky structure; friable; few fine roots; many fine quartz pebbles; strongly acid; clear, wavy boundary.

B2—18 to 30 inches, olive-yellow (2.5Y 6/6) sandy clay loam; common, medium, prominent, red (2.5YR 4/8) mottles; moderate, medium, angular and subangular blocky structure; firm; few fine roots; few fine quartz pebbles; very strongly acid; gradual, wavy boundary.

B3—30 to 37 inches, light yellowish-brown (2.5Y 6/4) to olive-yellow (2.5Y 6/6) sandy clay loam; many, medium, prominent mottles of red (2.5YR 4/8) and pale yellow (5Y 7/3); weak, medium, angular and subangular blocky structure; firm; few fine roots; very strongly acid; gradual, wavy boundary.

C—37 to 44 inches +, light yellowish-brown (2.5Y 6/4) and olive-yellow (2.5Y 6/6) coarse sandy clay loam; many, medium, prominent mottles of red (2.5YR 4/8) and pale yellow (5Y 7/3); structureless; friable; very strongly acid.

Appling coarse sandy loam, 2 to 6 percent slopes, eroded, 100 feet north of farm road, 0.1 mile east of its junction with Jersey-Loganville Road, 1 mile southeast of Youth:

Ap—0 to 8 inches, light olive-brown (2.5Y 5/4) to light yellowish-brown (2.5Y 6/4) coarse sandy loam; weak, fine, granular structure; friable; many fine roots; very strongly acid; clear, smooth boundary.

B1—8 to 17 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid; clear, smooth boundary.

B2—17 to 30 inches, mottled red (2.5YR 4/6), yellowish-red (5YR 4/8), and olive-yellow (2.5Y 6/6) clay; moderate, medium, subangular blocky structure; firm; very strongly acid; clear, wavy boundary.

B3—30 to 36 inches, mottled yellowish-red (5YR 4/8) and olive-yellow (2.5Y 6/6) heavy sandy clay loam; moderate, medium, subangular blocky structure; firm; very strongly acid; clear, wavy boundary.

C—36 to 42 inches +, mottled yellowish-red (5YR 4/8) and olive-yellow (2.5Y 6/6) sandy clay loam; structureless; friable; extremely acid.

Cecil coarse sandy loam, 2 to 6 percent slopes, eroded, 25 feet east of farm road, 0.5 mile south of its junction with State Route 138, 3 miles west of Monroe:

Ap—0 to 6 inches, yellowish-brown (10YR 5/4) coarse sandy loam; weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

B1—6 to 10 inches, red (2.5YR 5/6 to 5/8) sandy clay loam; weak, medium, subangular blocky structure; firm; strongly acid; clear, wavy boundary.

B2—10 to 30 inches, red (2.5YR 4/6 to 4/8) sandy clay; moderate, medium, angular blocky structure; firm; few fine mica flakes; very strongly acid; clear, wavy boundary.

B3—30 to 42 inches +, red (2.5YR 4/6) sandy clay loam; weak, fine, subangular blocky structure; friable to firm; many fine mica flakes; very strongly acid.

Durham loamy coarse sand, 2 to 6 percent slopes, west side of State Route 81, 0.8 mile northwest of Youth:

Ap—0 to 8 inches, pale-olive (5Y 6/3) loamy coarse sand; weak, fine, granular structure; loose; many medium and fine roots; medium acid; clear, wavy boundary.

A2—8 to 13 inches, light yellowish-brown (2.5Y 6/4) coarse sandy loam; weak, medium, subangular blocky structure; friable; many medium and fine roots; medium acid; clear, wavy boundary.

B1—13 to 16 inches, light olive-brown (2.5Y 5/6) light sandy clay loam; weak, medium, subangular blocky structure; friable; many fine pebbles; many fine roots; very strongly acid; clear, wavy boundary.

B21—16 to 23 inches, light olive-brown (2.5Y 5/6) heavy sandy clay loam; moderate, medium, angular and subangular blocky structure; friable; many fine pebbles; many fine roots; medium acid; clear, wavy boundary.

B22—23 to 34 inches, light olive-brown (2.5Y 5/6) sandy clay; common, medium, prominent mottles of red (2.5YR 5/8) and yellowish brown (10YR 5/6); moderate, medium, angular and subangular blocky structure; firm; very strongly acid; gradual, wavy boundary.

B3—34 to 44 inches, light yellowish-brown (2.5Y 6/4) sandy clay; many, medium, prominent mottles of yellowish brown (10YR 5/8) and red (2.5YR 5/8); moderate, medium, angular and subangular blocky structure; firm; very strongly acid.

C—44 to 48 inches +, olive-yellow (2.5Y 6/6) sandy clay loam; many, medium, prominent mottles of red (2.5YR 4/6) and light gray (2.5Y 7/2); weak subangular blocky structure; firm; many fine quartz crystals; very strongly acid.

Madison sandy clay loam, 2 to 6 percent slopes, severely eroded, 50 feet west of farm road, 2 miles northwest of Gratis:

Ap—0 to 7 inches, reddish-brown (2.5YR 4/4) sandy clay loam; weak, fine, granular structure; friable; few fine roots; few small schist fragments and quartz pebbles; numerous fine mica flakes; very strongly acid; clear, smooth boundary.

B2—7 to 22 inches, dark-red (2.5YR 3/6) silty clay; moderate, medium, angular and subangular blocky structure; firm; numerous fine mica flakes; strongly acid; clear, wavy boundary.

B3—22 to 30 inches, red (2.5YR 4/6) silty clay loam; moderate, medium, subangular blocky structure; firm; numerous small schist fragments; many fine mica flakes; greasy feel when rubbed; very strongly acid; clear, wavy boundary.
C—30 to 77 inches +, dusty-red and red, partly weathered mica schist.

Wickham fine sandy loam, 2 to 6 percent slopes, eroded, 200 yards east of Alcovy River, ¼ mile south of Alcovy Mountain:

Ap—0 to 6 inches, yellowish-brown (10YR 5/4 to 5/6) fine sandy loam; weak, fine, granular structure; slightly hard when dry; many fine roots; very strongly acid; clear, smooth boundary.
B21—6 to 15 inches, yellowish-red (5YR 4/8 to 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable when moist; many fine roots; very strongly acid; clear, smooth boundary.
B22—15 to 26 inches, yellowish-red (5YR 5/6 to 5/8) sandy clay loam; moderate, medium, angular and subangular blocky structure; friable when moist; few fine roots; very strongly acid; clear, wavy boundary.
B3—26 to 29 inches, yellowish-red (5YR 5/8) and strong-brown (7.5YR 5/8) sandy clay loam; moderate, medium, angular and subangular blocky structure; friable; few fine quartz crystals; very strongly acid; abrupt, smooth boundary.
C—29 to 42 inches +, mottled red, yellow, brownish-yellow, and yellowish-red heavy sandy clay loam; mottles are many, medium, and prominent; weak, medium, subangular blocky structure; firm when moist; very strongly acid.

Lloyd sandy loam, 2 to 6 percent slopes, eroded, 50 feet south of farm road, 0.5 mile east of its junction with Bold Spring-Between Road, 2.5 miles south of Bold Spring:

Ap—0 to 7 inches, reddish-brown (5YR 4/4) sandy loam; weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, wavy boundary.
B1—7 to 14 inches, reddish-brown (2.5YR 4/4 to 5/4) sandy clay loam; weak, medium, subangular blocky structure; friable; few fine roots; strongly acid; clear, wavy boundary.
B2—14 to 30 inches, dark-red (2.5YR 3/6) silty clay; moderate, medium, angular and subangular blocky structure; firm; few fine roots; strongly acid; gradual, wavy boundary.
B3—30 to 37 inches, red (2.5YR 4/6) to dark-red (2.5YR 3/6) sandy clay loam; moderate, medium, subangular blocky structure; firm; few fine quartz crystals; few fragments of partially weathered, brownish-yellow rock; strongly acid; clear, wavy boundary.
C—37 to 63 inches +, red (2.5YR 5/8) and brownish-yellow (10YR 6/6) sandy loam; structureless; friable; very strongly acid.

Augusta fine sandy loam, west side of Big Sandy Creek, 100 yards north of farm road, ¾ mile east of Union Chapel Church:

A0—1 inch to 0, dark grayish-brown, partly decomposed leaf litter.
Ap—0 to 7 inches, light olive-brown (2.5Y 5/4) fine sandy loam; weak, fine, granular structure; friable; many medium and fine roots; very strongly acid; abrupt, smooth boundary.
A3—7 to 11 inches, pale-yellow (5Y 8/4) sandy loam; weak, fine, granular structure; friable; many medium and fine roots; very strongly acid; abrupt, smooth boundary.
B1—11 to 17 inches, pale-yellow (5Y 7/3) sandy clay loam; few, medium, faint, olive-yellow (5Y 6/6) mottles; weak, fine, subangular blocky structure; friable; many medium and fine roots; very strongly acid; clear, wavy boundary.
B2—17 to 34 inches, light-gray (5Y 7/2) sandy clay; many, coarse, distinct, yellow (2.5Y 7/8) mottles; moderate, medium, angular and subangular blocky structure; firm; very strongly acid; gradual, wavy boundary.
C—34 to 44 inches +, white (5Y 8/2) sandy clay; few, fine, faint, pale-yellow (5Y 7/3) mottles; massive; firm; very strongly acid.

Colfax sandy loam, 2 to 6 percent slopes, 25 feet south of farm road, 0.5 mile east of its junction with State Route 11, 2 miles south of Monroe:

Ap—0 to 8 inches, light yellowish-brown (2.5Y 6/4) to light olive-brown (2.5Y 5/4) sandy loam; weak, fine, granular structure; nonsticky when wet; many fine and medium roots; few small pebbles; very strongly acid; clear, wavy boundary.
B1—8 to 12 inches, yellow (2.5Y 7/6) and olive (5Y 5/3) sandy clay loam; weak, fine, subangular blocky structure; slightly sticky when wet; many small pebbles; very strongly acid; clear, wavy boundary.
B21—12 to 18 inches, yellow (2.5Y 7/6) sandy clay; few, fine, prominent, red (10R 5/6) mottles; moderate, medium, subangular blocky structure; slightly plastic to plastic when wet; very strongly acid; gradual, wavy boundary.
B22g—18 to 26 inches, pale-olive (5Y 6/4) sandy clay; many, medium, prominent mottles of light gray, pale red, and yellowish brown; moderate, medium, subangular blocky structure; slightly plastic to plastic when wet; many small pebbles; very strongly acid; clear, wavy boundary.
B3g—26 to 36 inches +, mottled yellowish-brown, pale-red, and olive-yellow sandy clay loam; gray clay lenses; mottles are many, coarse, and prominent; moderate, medium, subangular blocky structure; slightly plastic when wet; very strongly acid.

Reddish-Brown Lateritic soils

The Reddish-Brown Lateritic great soil group is in the zonal order and consists of soils that have a dark reddish-brown mineral surface layer over a dark-red clay loam to clay illuvial B horizon. These soils lack a light-colored eluvial A2 horizon like that of Red-Yellow Podzolic soils; they have a redder B horizon than Red-Yellow Podzolic soils. They developed in a moist, warm-temperate climate under deciduous hardwoods.

In Walton County, the Reddish-Brown Lateritic group is represented by Davidson soils, which fit the central concept of the group. These soils formed in material weathered from basic igneous and metamorphic rock. Their dark reddish-brown A horizon is darker than that of Cecil soils, and their content of coarse fragments, sand, and fine mica is lower. Kaolinite and vermiculite are the dominant clay minerals.

The reaction is medium acid to strongly acid, and the organic-matter content is low. The base-exchange capacity of the subsoil is less than 20 milliequivalents per 100 grams of soil, and the base saturation is less than 30 percent.

A detailed profile description of a representative Davidson soil follows.

Davidson loam, 2 to 6 percent slopes, eroded, 50 feet west of State Route 81, 1 mile southeast of Bold Spring:

Ap—0 to 7 inches, dark reddish-brown (5YR 3/4) loam; weak, fine, granular structure; friable; many fine roots; strongly acid; clear, wavy boundary.
B1—7 to 20 inches, dusky-red (10R 3/4) clay loam; moderate, medium, subangular blocky structure; firm; many fine roots; very strongly acid; clear, wavy boundary.
B2—20 to 42 inches +, dark-red (10R 3/6) clay; moderate, medium, subangular blocky structure; firm; few fine roots; many fine quartz crystals; few concretions that are yellow when crushed; very strongly acid.

Low-Humic Gley soils

The Low-Humic Gley great soil group is in the intrazonal order. It consists of poorly drained soils that have

a thin surface horizon, moderately high in organic-matter content, over a mottled gray and brown, gleylike, mineral horizon that is little different from the surface horizon in texture (*5*). In Walton County, the Low-Humic Gley group is represented by Wehadkee and Worsham soils, which fit the central concept of the group. The reaction of these soils is medium acid to very strongly acid, and the percentage of base saturation is low. The upper horizons are weak in structure, and the lower horizons are structureless.

Only one Wehadkee soil is mapped in this county. It is on the lowest areas of the bottom lands. The water table is at or near the surface during the wetter periods and about 2 feet below the surface during the driest periods.

Worsham soils are in depressions, along the base of slopes, and near the head of drainageways. These soils formed in material weathered from light-colored granite and gneiss. The A horizon is thin, highly leached, and light colored; it contains less organic matter than the A horizon of a typical Low-Humic Gley soil. The B1g horizon is light-gray sandy clay loam to sandy clay mottled with yellow; the B2g is light-gray, plastic, massive clay mottled with yellow. It has little pore space.

A detailed profile description of representative Wehadkee and Worsham soils follows.

Wehadkee silt loam, east side of Big Sandy Creek, 200 yards north of farm road, 0.8 mile east of Union Chapel Church:

Ap—0 to 9 inches, dark grayish-brown (10YR 4/2) silt loam; many, fine, distinct, light olive-gray (5Y 6/2) mottles; weak, fine, granular structure; slightly sticky when wet; many fine roots; very strongly acid; gradual, wavy boundary.

C1—9 to 21 inches, light olive-gray (5Y 6/2) silt loam; many, medium, distinct, dark grayish-brown (10YR 4/2) mottles; structureless; sticky when wet; many fine roots; medium acid; gradual, wavy boundary.

C2g—21 to 27 inches, gray (5Y 5/1) silty clay loam; many, medium, prominent, very dark brown (10YR 2/2) mottles; structureless; slightly plastic when wet; very strongly acid; clear, wavy boundary.

C3g—27 to 36 inches, gray (6/0) silty clay loam; few, fine, faint, yellow (2.5Y 7/6) mottles; structureless; slightly plastic when wet; very strongly acid; clear, wavy boundary.

C4g—36 to 44 inches +, gray (6/0) silty clay loam; structureless; slightly plastic when wet; very strongly acid.

Worsham soils, 2 to 6 percent slopes, 100 yards east of State Route 11, ¼ mile south of Pleasant Valley Church:

A0—2 inches to 0, partly decomposed roots and leaf litter.

A1—0 to 5 inches, gray (5Y 5/1) sandy loam; common, fine, distinct mottles of light olive brown (2.5Y 5/4) and olive (5Y 5/3); weak, medium and fine, subangular blocky structure; slightly sticky; many fine and medium roots and few large roots; very strongly acid; clear, wavy boundary.

A2—5 to 8 inches, gray (5/0) sandy loam; common, medium, prominent mottles of brownish yellow (10YR 6/8) and light olive brown (2.5Y 5/4); weak, medium and fine, subangular blocky structure; slightly sticky; many fine and medium roots and few large roots; very strongly acid; abrupt, smooth boundary.

B1g—8 to 15 inches, light-gray (7/0) sandy clay; many, coarse, prominent, yellow (10YR 7/8) mottles; weak, medium, subangular blocky structure; sticky; few fine roots; many fine quartz crystals; very strongly acid; gradual, wavy boundary.

B2g—15 to 36 inches +, light-gray (7/0) clay; common, medium, distinct, yellow (2.5Y 8/8) mottles; massive; plastic; very strongly acid.

Alluvial soils

Alluvial soils are in the azonal order. They developed from transported and recently deposited material (alluvium) that has been modified little or not at all by the soil-forming process.

No soils in Walton County fit the central concept of this great soil group. Chewacla soils are Alluvial soils, but they have some characteristics of Low-Humic Gley soils. They are immature, somewhat poorly drained soils on first bottoms that are subject to flooding. The uppermost 10 to 18 inches is brown to reddish brown and is not gleyed; the lower part is at least moderately gleyed. The entire profile is very strongly acid, and it has a low percentage of base saturation. Chewacla soils have enough clay to impart a silt loam to silty clay loam texture to the uppermost 2 or 3 feet of the profile, but they do not have an evident B horizon.

A detailed profile description for a representative Chewacla soil follows.

Chewacla silt loam, 110 feet north of Jacks Creek, 50 yards west of farm road, 0.8 mile north of its junction with State Route 83, 0.2 mile northwest of Good Hope:

Ap—0 to 7 inches, brown (7.5YR 5/4) to strong-brown (7.5YR 5/6) silt loam; few, fine, distinct, light yellowish-brown (10YR 6/4) variegations; structureless; slightly sticky when wet; many fine and medium roots; very strongly acid; clear, smooth boundary.

C1—7 to 15 inches, brown (7.5YR 5/4) to strong-brown (7.5YR 5/6) heavy silt loam; common, medium, distinct, light yellowish-brown (10YR 6/4) variegations; structureless; slightly sticky when wet; many fine and medium roots; many, fine, black concretions; very strongly acid; clear, smooth boundary.

C2g—15 to 36 inches +, gray (6/0) silty clay loam; many, medium, prominent mottles of brownish yellow (10YR 6/6) and yellowish red (5YR 5/6); structureless; sticky when wet; very strongly acid.

Lithosols

Lithosols are in the azonal order. They have no clearly expressed soil morphology and consist of a mass of freshly and imperfectly weathered hard rock or of hard rock fragments. Louisa and Louisburg soils are the only Lithosols in Walton County. These soils formed under forest, mainly of hickory and oak. About 65 percent of the acreage is on slopes of more than 10 percent where geologic erosion is moderately rapid or rapid. Much of the material is washed away as fast as it forms, so a complete sequence of horizons has not developed (*5*).

Because their parent material is weathered from granite, gneiss, and to some extent, quartzite, Louisburg soils have a lower content of mica than Louisa soils, whose parent material weathered from mica schist and mica gneiss.

A detailed profile description of representative Louisburg and Louisa soils follows.

Louisa fine sandy loam, 15 to 45 percent slopes, 50 yards east of Mountain Creek, 100 yards north of Monroe-Jersey Road, 3 miles southwest of Monroe:

A—0 to 6 inches, grayish-brown (10YR 5/2) to brown (10YR 5/3) fine sandy loam; weak, fine, granular structure; soft; many medium and fine roots; many small schist fragments; very strongly acid; clear, wavy boundary.

C1—6 to 14 inches, yellowish-brown (10YR 5/8) fine sandy loam; structureless; soft; many fine mica flakes; greasy feel when rubbed; many small schist fragments; very strongly acid; clear, wavy boundary.

C2—14 to 33 inches +, yellowish-brown (10YR 5/4) fine sandy loam; greasy feel; structureless; soft; many fine mica flakes; many schist fragments (50 percent by volume); very strongly acid.

Louisburg loamy coarse sand, 2 to 6 percent slopes, 100 feet east of farm road, 2.9 miles south of its junction with State Route 20, 1 mile southwest of Loganville:

Ap—0 to 7 inches, light-gray (2.5Y 7/2) loamy coarse sand; weak, fine, granular structure; loose when dry; many fine roots; few small pebbles; strongly acid; clear, smooth boundary.

C1—7 to 26 inches, light yellowish-brown (2.5Y 6/4) loamy coarse sand; structureless; loose; few small pebbles; very strongly acid; gradual, wavy boundary.

C2—26 to 33 inches, light yellowish-brown (2.5Y 6/4) loamy coarse sand; structureless; loose; many small pebbles; very strongly acid; abrupt, irregular boundary.

Dr—33 inches +, light-colored, partly disintegrated parent rock.

Additional Facts About the County

This section tells about the organization, settlement, and population of Walton County. It also gives information about community facilities, industries, transportation, and markets. The last part of the section discusses agriculture.

Organization, Settlement, and Population

Walton County was established by a State Legislative Act of December 15, 1818. It was the forty-sixth county organized in Georgia. It consisted of land acquired by treaty from Creek and Cherokee Indians. The county was named for George Walton, a much honored Georgian who signed the Declaration of Independence.

Soon after it was established, the county was divided into 250-acre tracts, which were distributed under a lottery plan known as the 1820 Lottery. The grant fee was $18.00 per lot.

Cowpens, a village named for the famous Battle of Cowpens that took place in South Carolina during the Revolutionary War, was the original county seat. Monroe, incorporated on November 30, 1821, is the present county seat.

The population of Walton County was 12,470 in 1845; 21,118 in 1930; and 20,481 in 1960. In 1930, urban population was 3,706 and rural population was 17,412. In 1960, urban population had increased to 6,826 and rural population had decreased to 13,655.

Community Facilities

Elementary and secondary schools serve all parts of the county. Buses transport the children to and from school. A mobile library serves rural areas and towns that do not have a permanent library. Throughout the county there are churches representing several denominations. A modern county hospital and health clinic is located at Monroe. Hard Labor Creek Recreation Park, in the southeastern section of the county, has facilities for camping, swimming, boating, and fishing.

Natural gas is supplied by one transmission line that crosses the county. Electric power is available in all parts of the county; and telephone service, in most parts. Most homes have radio and television.

Industry

In recent years, industrial employment has increased in Walton County. At present, a much larger number of people are employed in industry, either in or out of the county, than in agriculture. About 2,550 people are employed by industries, chiefly textile mills and garment factories, in or near Monroe, Loganville, and Social Circle. Others commute daily to jobs in Atlanta or other nearby cities of neighboring counties.

Many families that have one or more members employed in industry farm on a part-time basis.

Transportation and Markets

U.S. Highway 78 crosses the county from east to west. State Highways 11, 138, 83, 229, 10, and 12 also pass through the county. These highways and many county roads are paved. Most unpaved county roads are surfaced with sandy or gravelly material and are serviceable throughout the year. A line of the Georgia Railroad crosses the county at Social Circle, and a spur line extends from this point to Monroe. Four motor freight lines serve Monroe daily.

Cotton can be marketed in Monroe. The State Farmers Market, where vegetables, melons, fruits, and other produce can be sold, is in Atlanta. Livestock sale barns are located at Atlanta, Athens, and Hub Junction. No farm in the county is more than 30 miles from one of these sale barns.

Agriculture

Before the white settlers arrived, the Creek and Cherokee Indians farmed some of the sandy land along the streams. Corn, beans, and potatoes were the main crops; some tobacco also was grown. The Indians did not depend entirely on crops for food; they included fish, game, and wild fruit in their diet.

Early settlers began to clear land and to extend farming. By 1900, 208,463 acres were in farms. Since then farm acreage has decreased. In 1940, 191,493 acres were in farms; in 1950, 204,090 acres; and in 1959, 139,695 acres.

The 1959 census of agriculture showed 1,137 farms in the county. The average size was 122.9 acres. About 63 percent of the farms were less than 100 acres in size, and about 36 percent were between 100 and 999 acres in size. Nine farms were more than 1,000 acres in size. Of the 1,137 farms in the county, 486 were miscellaneous or general farms; 531, field-crop farms; 53, poultry farms; 37, dairy farms; and 25, livestock farms. Farms operated by full owners numbered 509; by part owners, 178; by tenants, 447; and by managers, 3.

Table 16 shows the acreage of principal field crops and the number of fruit and nut trees in stated years, and table 17 gives the number of livestock.

In 1959, 903 tractors were reported on 604 farms; 615 motortrucks, on 500 farms; and 1,091 automobiles, on 922 farms.

TABLE 16.—*Acreage of principal crops and number of bearing fruit and nut trees in stated years*

Crop	1949	1954	1959
	Acres	*Acres*	*Acres*
Corn for all purposes	20, 841	15, 365	9, 104
Cotton, harvested	36, 650	21, 641	13, 459
Oats, threshed	4, 090	6, 019	2, 277
Wheat, threshed	1, 974	2, 320	1, 434
Hay crops [1]	8, 517	8, 614	5, 511
	Number [2]	*Number*	*Number*
Apple trees of all ages	7, 639	1, 652	1, 080
Peach trees of all ages	16, 765	4, 578	2, 574
Pear trees of all ages	1, 406	388	230
Pecan trees of all ages	5, 993	3, 413	3, 550

[1] Excluding sorghum, soybean, cowpea, and peanut hay.
[2] The census year is one year later than crop year given at head of column.

TABLE 17.—*Livestock of all ages in stated years*

Livestock	1950	1954	1959
	Number	*Numuer*	*Number*
Horses and mules	2, 977	1, 531	632
Cattle and calves	9, 332	14, 099	12, 870
Hogs and pigs	5, 446	5, 009	6, 173
Chickens [1]	54, 484	65, 800	98, 537
Chickens, including broilers sold	[2] 381, 626	543, 861	1, 422, 936

[1] Four months old and over.
[2] In 1949.

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Glossary

Alluvium (Alluvial deposits). Soil material, such as sand, silt, or clay, deposited on land by streams.

Available moisture capacity. The capacity of a soil to hold water in a form available to plants. Amount of moisture held in soil between field capacity, or about one-third atmosphere of tension, and the wilting coefficient, or about 15 atmospheres of tension.

B horizon. A soil layer, usually beneath the A horizon or surface soil, characterized by (1) clay, iron, or aluminum, with accessory organic matter, which has accumulated by receiving suspended material from the A horizon or by clay development in place; or (2) blocky or prismatic structure; or (3) some combination of these features. In soils with distinct profiles, the B horizon is also referred to as the subsoil. See Horizon, soil.

Bedrock. The solid rock that underlies soils and other surface formations.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter (0.000079 inch) in diameter. As a textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Concretions. Hard grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil material and the ease with which a lump can be crushed by the fingers. Terms used to describe consistence are—

Friable. When moist, crushes easily by hand and coheres when pressed together. Friable soils are generally easily tilled.

Firm. When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable. Firm soils are likely to be difficult to till.

Hard. When dry, moderately resistant to pressure; can be broken in the hands without difficulty but is barely breakable between thumb and forefinger.

Loose. Noncoherent when moist or dry; will not hold together in a mass. Loose soils are generally coarse textured and are easily tilled.

Plastic. When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger. Plastic soils are high in clay and are difficult to till.

Soft. Weakly coherent and fragile; when dry, breaks to powder or individual grains under slight pressure.

Deep soil. Generally, a soil in which the depth to parent material or to other unconsolidated rock material not modified by soil forming processes is about 40 inches.

Drainage, soil. The rapidity and extent of the removal of water from the soil, in relation to additions, especially by surface runoff, or by flow through the soil to underground spaces, or by a combination of both processes.

Erosion. The wearing away of the land surface by wind, moving water, ice, and other geological agents.

Fertility, soil. The quality of a soil that enables it to provide compounds, in sufficient amounts and in proper balance, for the growth of specified plants, when other factors, such as light, moisture, temperature, and the physical condition (or tilth) of the soil, are favorable.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes.

Igneous rock. Rock that has been formed by the cooling of molten mineral material, such as granite, syenite, diorite, and gabbro.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. It may be limited either by the infiltration capacity of the soil or by the rate at which water is applied to the soil surface.

Metamorphic rock. Rock of any origin that has been greatly altered or completely changed physically by heat, pressure, and moisture. Igneous and sedimentary rocks may be changed to metamorphic rock, or one kind of metamorphic rock may be changed to another kind. Gneiss, schist, and slate are examples of metamorphic rock.

Mottled. Irregularly marked with spots of different colors that vary in number and size.

Parent material (soil). The unconsolidated mass of rock material (or peat) from which soil has formed.

Parent rock (soil). The rock from which the parent material of soil was derived.

Permeability, soil. That quality of a soil horizon that enables water and air to move through it. Terms used to describe permeability are—*very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Plow layer. The soil ordinarily moved in tillage; equivalent to surface soil.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material. See Horizon, soil.

Reaction, soil. The degree of acidity or alkalinity of a soil mass, expressed in pH values or in words as follows:

	pH		*pH*
Extremely acid	below 4.5	Mildly alkaline	7.4–7.8
Very strongly acid	4.5–5.0	Moderately alkaline	7.9–8.4
Strongly acid	5.1–5.5	Strongly alkaline	8.5–9.0
Medium acid	5.6–6.0	Very strongly alkaline	9.1 and higher
Slightly acid	6.1–6.5		
Neutral	6.6–7.3		

Relief. The elevations or inequalities of a land surface, considered collectively.

Root zone. The part of the soil that plant roots can penetrate in search of water and plant nutrients.

Runoff. The water that flows off the land surface.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 to 2.0 millimeters in diameter. Most sand grains consist of quartz, but they may be any mineral composition. As a textural class, soil material that is 85 percent or more sand and not more than 10 percent clay.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a textural class, soil material that is 80 percent or more silt and less than 12 percent clay.

Soil. The natural medium for growth of land plants; a natural three-dimensional body on the earth's surface that has properties resulting from the integrated effects of climate and living matter acting upon parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles, less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *Very coarse sand* (2.0 to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Usually, the characteristics of the material in these horizons are unlike those of the underlying parent material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the profile below plow depth.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Upland (geological). Land consisting of material unworked by water in recent geologic time and lying, in general, at a higher elevation than the alluvial plain or stream terrace. Land above the lowlands along rivers.

GUIDE TO MAPPING UNITS

[See table 6, page 7, for the approximate acreage and proportionate extent of the soils; table 7, page 34, for estimated average acre yields; tables 12, 13, and 14, on pages 46, 50, and 56, for information significant to soil engineering]

Map symbol	Mapping unit	Page	Capability unit		Woodland group		Wildlife group	
			Symbol	Page	Number	Page	Number	Page
Afs	Augusta fine sandy loam	11	IIIw-3	28	8	40	8	44
AkB	Altavista fine sandy loam, 2 to 6 percent slopes	9	IIe-2	24	3	38	1	41
Alm	Alluvial land	8	IIw-2	25	1	37	7	44
Alp	Alluvial land, moderately wet	8	IIIw-2	28	8	40	8	44
AnB3	Appling sandy clay loam, 2 to 6 percent slopes, severely eroded	10	IIIe-2	26	4	39	3	42
AnC3	Appling sandy clay loam, 6 to 10 percent slopes, severely eroded	10	IVe-1	28	4	39	3	42
AnD3	Appling sandy clay loam, 10 to 15 percent slopes, severely eroded	11	VIe-2	30	4	39	4	43
Avp	Alluvial land, wet	8	IVw-1	30	8	40	9	44
AxA	Appling coarse sandy loam, 0 to 2 percent slopes	10	IIs-1	25	5	39	1	41
AxB	Appling coarse sandy loam, 2 to 6 percent slopes	10	IIe-2	24	5	39	1	41
AxB2	Appling coarse sandy loam, 2 to 6 percent slopes, eroded	9	IIe-2	25	5	39	1	41
AxC2	Appling coarse sandy loam, 6 to 10 percent slopes, eroded	10	IIIe-2	26	5	39	1	41
AxD2	Appling coarse sandy loam, 10 to 15 percent slopes, eroded	10	IVe-1	28	5	39	2	41
CdB	Cecil coarse sandy loam, 2 to 6 percent slopes	12	IIe-2	24	5	39	1	41
CdB2	Cecil coarse sandy loam, 2 to 6 percent slopes, eroded	11	IIe-2	24	5	39	1	41
CdC2	Cecil coarse sandy loam, 6 to 10 percent slopes, eroded	12	IIIe-2	26	5	39	1	41
CdD2	Cecil coarse sandy loam, 10 to 15 percent slopes, eroded	12	IVe-1	28	5	39	2	41
CdE2	Cecil coarse sandy loam, 15 to 25 percent slopes, eroded	12	VIe-2	30	5	39	2	41
CiB	Colfax sandy loam, 2 to 6 percent slopes	14	IIIw-3	28	6	39	8	44
CiC2	Colfax sandy loam, 6 to 10 percent slopes, eroded	14	VIe-2	30	6	39	8	44
Csl	Chewacla silt loam	13	IIIw-2	28	8	40	8	44
CZB3	Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded	12	IIIe-1	26	4	39	3	42
CZC3	Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded	12	IVe-1	28	4	39	3	42
CZC4	Cecil-Gullied land complex, 6 to 10 percent slopes	13	VIe-2	30	4	39	4	43
CZD3	Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded	12	VIe-2	30	4	39	4	43
CZD4	Cecil-Gullied land complex, 10 to 15 percent slopes	13	VIIe-1	31	4	39	4	43
CZE3	Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded	12	VIIe-1	31	4	39	4	43
DgB2	Davidson loam, 2 to 6 percent slopes, eroded	14	IIe-1	24	2	37	1	41
DgC2	Davidson loam, 6 to 10 percent slopes, eroded	14	IIIe-1	26	2	37	1	41
DjA	Durham loamy coarse sand, 0 to 2 percent slopes	15	IIs-1	25	5	39	1	41
DjB	Durham loamy coarse sand, 2 to 6 percent slopes	15	IIe-2	24	5	39	1	41
DpB3	Davidson clay, 2 to 6 percent slopes, severely eroded	15	IIIe-1	26	4	39	3	42
DpC3	Davidson clay, 6 to 10 percent slopes, severely eroded	15	IVe-1	28	4	39	3	41
DpD3	Davidson clay, 10 to 15 percent slopes, severely eroded	15	IVe-1	28	4	39	4	43
Gul	Gullied land	15	VIIe-4	31	(1)		4	43
LCB	Louisburg loamy coarse sand, 2 to 6 percent slopes	19	IIIe-5	27	5	39	5	43
LCC	Louisburg loamy coarse sand, 6 to 10 percent slopes	19	IVe-4	29	5	39	5	43
LCD	Louisburg loamy coarse sand, 10 to 15 percent slopes	19	VIe-3	30	5	39	6	43
LCE2	Louisburg loamy coarse sand, 15 to 25 percent slopes, eroded	19	VIIe-2	31	5	39	6	43
Lcm	Local alluvial land	18	I-1	24	1	37	7	44
LdB2	Lloyd sandy loam, 2 to 6 percent slopes, eroded	16	IIe-1	24	2	37	1	41
LdC2	Lloyd sandy loam, 6 to 10 percent slopes, eroded	16	IIIe-1	26	2	37	1	41
LDC	Louisburg stony loamy coarse sand, 6 to 10 percent slopes	19	VIs-1	31	5	39	6	43
LdD2	Lloyd sandy loam, 10 to 15 percent slopes, eroded	17	IVe-1	28	2	37	2	41
LdE2	Lloyd sandy loam, 15 to 25 percent slopes, eroded	17	VIe-2	30	2	37	2	41
LDE	Louisburg stony loamy coarse sand, 10 to 25 percent slopes	19	VIIe-2	31	5	39	6	43
LDF	Louisburg stony loamy coarse sand, 25 to 45 percent slopes	20	VIIe-2	31	5	39	6	43
LeB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded	17	IIIe-1	26	4	39	3	42
LeC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded	17	IVe-1	28	4	39	3	42
LeC4	Lloyd-Gullied land complex, 6 to 10 percent slopes	17	VIe-2	30	4	39	4	43
LeD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded	17	IVe-1	28	4	39	4	43
LeD4	Lloyd-Gullied land complex, 10 to 15 percent slopes	18	VIe-2	30	4	39	4	43
LeE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded	17	VIe-2	30	4	39	4	43
LeF3	Lloyd clay loam, 25 to 45 percent slopes, severely eroded	17	VIIe-1	31	4	39	4	43
LgE	Lloyd stony loam, 10 to 25 percent slopes	17	VIIe-2	31	2	37	6	43
LjF	Louisa fine sandy loam, 15 to 45 percent slopes	18	VIIe-2	31	7	40	6	43
MlB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded	20	IIIe-1	26	4	39	3	42
MlC3	Madison sandy clay loam, 6 to 10 percent slopes, severely eroded	20	IVe-1	28	4	39	3	42
MlD3	Madison sandy clay loam, 10 to 15 percent slopes, severely eroded	20	VIe-2	30	4	39	4	43
MlE3	Madison sandy clay loam, 15 to 25 percent slopes, severely eroded	21	VIIe-1	31	4	39	4	43
Rok	Rock outcrop	21	VIIIs-1	32	(1)		6	43
Wea	Wehadkee silt loam	21	IVw-1	30	8	40	9	44
WgB2	Wickham fine sandy loam, 2 to 6 percent slopes, eroded	22	IIe-1	24	3	38	1	41
WmB	Worsham soils, 2 to 6 percent slopes	22	Vw-1	30	6	39	9	44

[1] Not suitable for trees.

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program information (e.g., Braille, large print, audiotape, etc.), please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

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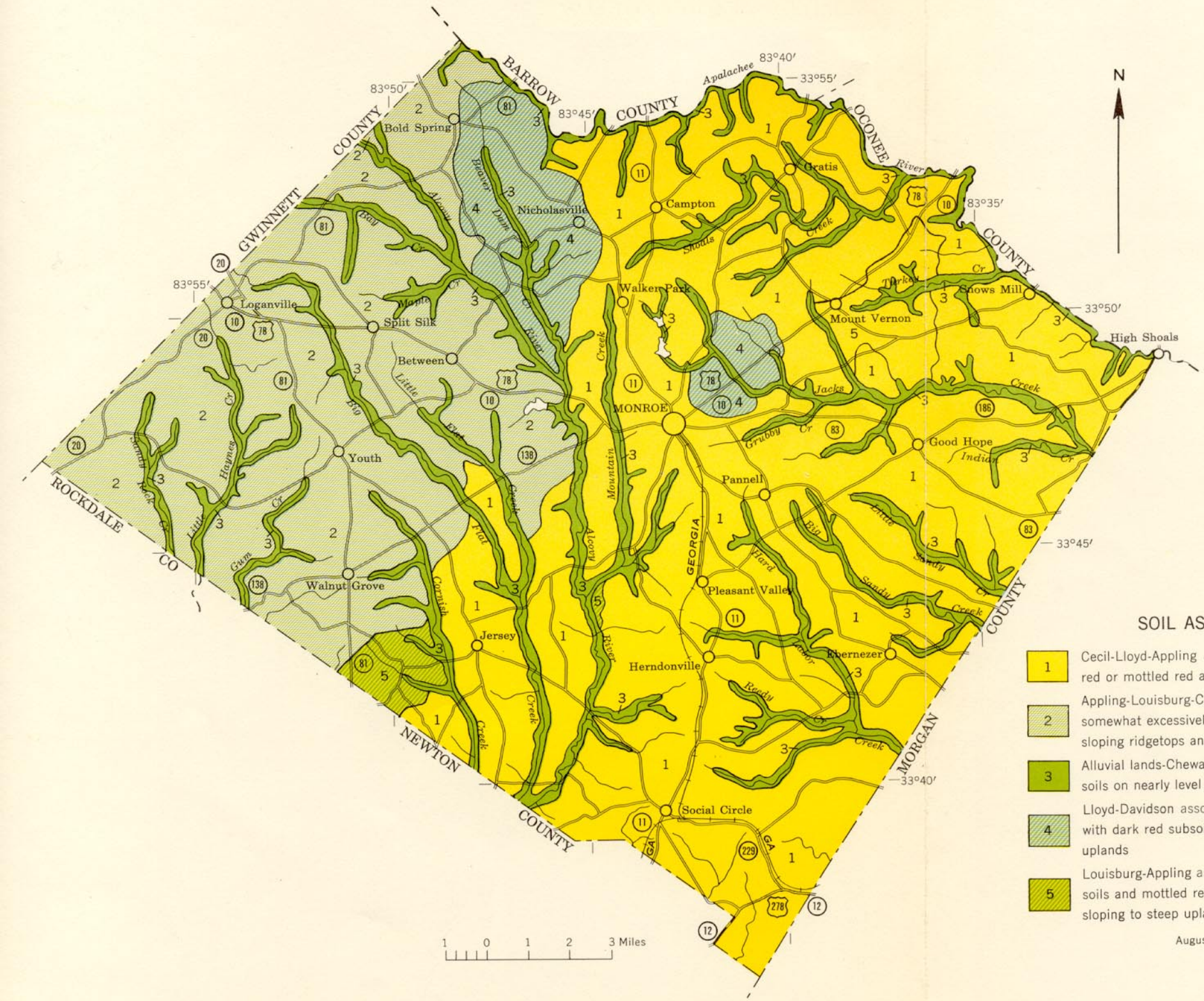
For additional information dealing with Supplemental Nutrition Assistance Program (SNAP) issues, call either the USDA SNAP Hotline Number at (800) 221-5689, which is also in Spanish, or the State Information/Hotline Numbers (http://directives.sc.egov.usda.gov/33085.wba).

All Other Inquiries

For information not pertaining to civil rights, please refer to the listing of the USDA Agencies and Offices (http://directives.sc.egov.usda.gov/33086.wba).

GENERAL SOIL MAP
WALTON COUNTY, GEORGIA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE, AGRICULTURAL EXPERIMENT STATIONS

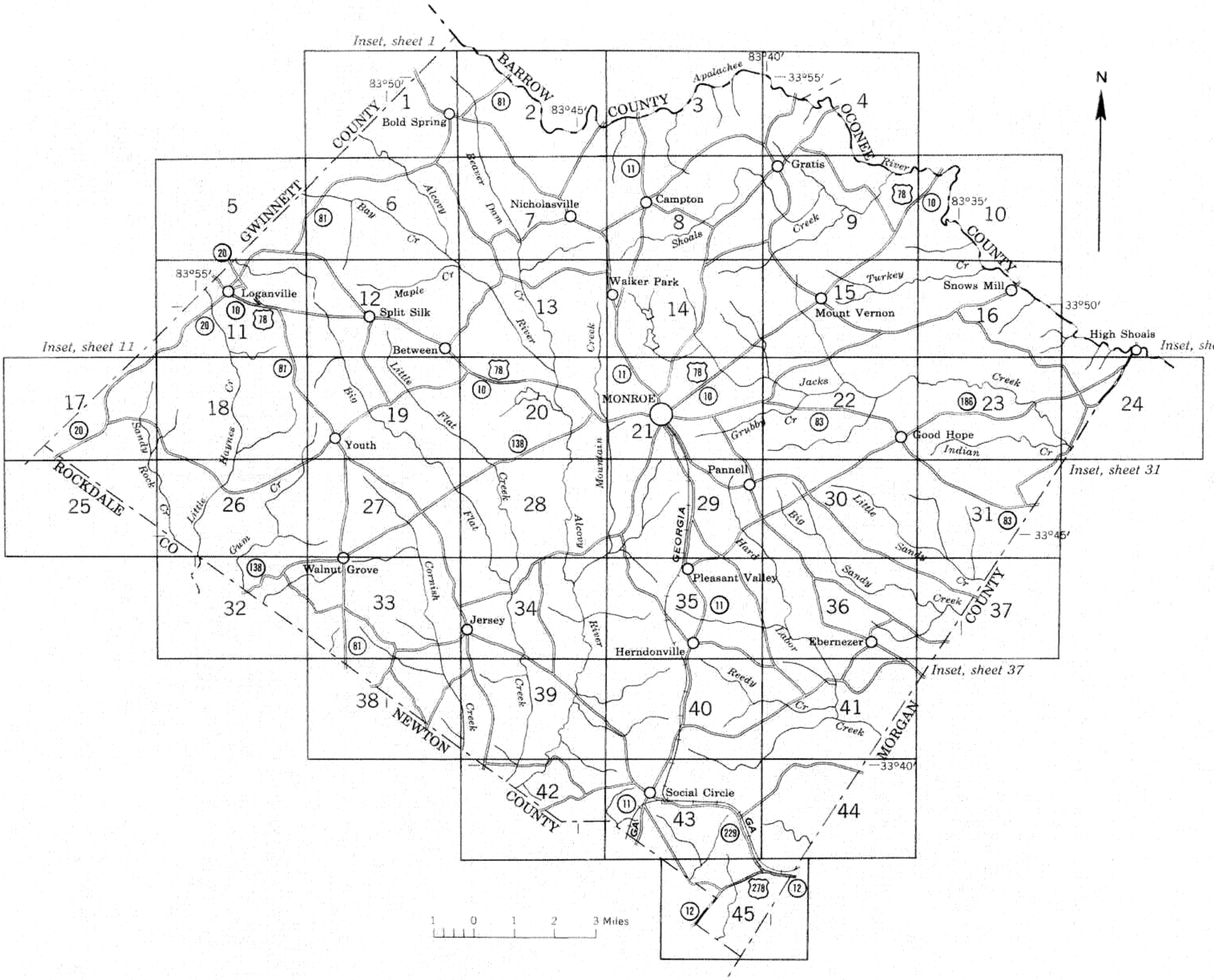


SOIL ASSOCIATIONS

1. Cecil-Lloyd-Appling association: Deep, well-drained, red or mottled red and yellow soils on uplands
2. Appling-Louisburg-Cecil association: Well-drained to somewhat excessively drained soils on uplands; gently sloping ridgetops and fairly steep side slopes
3. Alluvial lands-Chewacla-Wehadkee association: Alluvial soils on nearly level flood plains
4. Lloyd-Davidson association: Deep, well-drained soils with dark red subsoil on very gently sloping to steep uplands
5. Louisburg-Appling association: Light-colored stony soils and mottled red and yellow soils on very gently sloping to steep uplands

August 1963

INDEX TO MAP SHEETS
WALTON COUNTY, GEORGIA



SOIL LEGEND

The first letter in each symbol is the initial one of the soil name. If the third letter is a capital, it shows the range of slope from A, less than 2 percent, to F, 15 to 45 percent. A number after the slope letter denotes the class of erosion as given in the soil name.

SYMBOL	NAME
Afs	Augusta fine sandy loam
AkB	Altavista fine sandy loam, 2 to 6 percent slopes
Alm	Alluvial land
Alp	Alluvial land, moderately wet
AnB3	Appling sandy clay loam, 2 to 6 percent slopes, severely eroded
AnC3	Appling sandy clay loam, 6 to 10 percent slopes, severely eroded
AnD3	Appling sandy clay loam, 10 to 15 percent slopes, severely eroded
Avp	Alluvial land, wet
AxA	Appling coarse sandy loam, 0 to 2 percent slopes
AxB	Appling coarse sandy loam, 2 to 6 percent slopes
AxB2	Appling coarse sandy loam, 2 to 6 percent slopes, eroded
AxC2	Appling coarse sandy loam, 6 to 10 percent slopes, eroded
AxD2	Appling coarse sandy loam, 10 to 15 percent slopes, eroded
CdB	Cecil coarse sandy loam, 2 to 6 percent slopes
CdB2	Cecil coarse sandy loam, 2 to 6 percent slopes, eroded
CdC2	Cecil coarse sandy loam, 6 to 10 percent slopes, eroded
CdD2	Cecil coarse sandy loam, 10 to 15 percent slopes, eroded
CdE2	Cecil coarse sandy loam, 15 to 25 percent slopes, eroded
CiB	Colfax sandy loam, 2 to 6 percent slopes
CiC2	Colfax sandy loam, 6 to 10 percent slopes, eroded
Csl	Chewacla silt loam
CZB3	Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded
CZC3	Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded
CZC4	Cecil-Gullied land complex, 6 to 10 percent slopes
CZD3	Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded
CZD4	Cecil-Gullied land complex, 10 to 15 percent slopes
CZE3	Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded
DgB2	Davidson loam, 2 to 6 percent slopes, eroded
DgC2	Davidson loam, 6 to 10 percent slopes, eroded
DjA	Durham loamy coarse sand, 0 to 2 percent slopes
DjB	Durham loamy coarse sand, 2 to 6 percent slopes
DpB3	Davidson clay, 2 to 6 percent slopes, severely eroded
DpC3	Davidson clay, 6 to 10 percent slopes, severely eroded
DpD3	Davidson clay, 10 to 15 percent slopes, severely eroded
Gul	Gullied land
LCB	Louisburg loamy coarse sand, 2 to 6 percent slopes
LCC	Louisburg loamy coarse sand, 6 to 10 percent slopes
LCD	Louisburg loamy coarse sand, 10 to 15 percent slopes
LCE2	Louisburg loamy coarse sand, 15 to 25 percent slopes, eroded
Lcm	Local alluvial land
LdB2	Lloyd sandy loam, 2 to 6 percent slopes, eroded
LdC2	Lloyd sandy loam, 6 to 10 percent slopes, eroded
LDC	Louisburg stony loamy coarse sand, 6 to 10 percent slopes
LdD2	Lloyd sandy loam, 10 to 15 percent slopes, eroded
LdE2	Lloyd sandy loam, 15 to 25 percent slopes, eroded
LDE	Louisburg stony loamy coarse sand, 10 to 25 percent slopes
LDF	Louisburg stony loamy coarse sand, 25 to 45 percent slopes
LeB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded
LeC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded
LeC4	Lloyd-Gullied land complex, 6 to 10 percent slopes
LeD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded
LeD4	Lloyd-Gullied land complex, 10 to 15 percent slopes
LeE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded
LeF3	Lloyd clay loam, 25 to 45 percent slopes, severely eroded
LgE	Lloyd stony loam, 10 to 25 percent slopes
LjF	Louisa fine sandy loam, 15 to 45 percent slopes
MlB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded
MlC3	Madison sandy clay loam, 6 to 10 percent slopes, severely eroded
MlD3	Madison sandy clay loam, 10 to 15 percent slopes, severely eroded
MlE3	Madison sandy clay loam, 15 to 25 percent slopes, severely eroded
Rok	Rock outcrop
Wea	Wehadkee silt loam
WgB2	Wickham fine sandy loam, 2 to 6 percent slopes, eroded
WmB	Worsham soils, 2 to 6 percent slopes

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Dual
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail, foot
- Railroad
- Ferries
- Ford
- Grade
- R. R. over
- R. R. under
- Tunnel

Buildings
- School
- Church
- Station

Mines, pits, and dumps

Forest fire or lookout station

Power lines

Pipe lines

Cemeteries

Dams

Levees

Tanks

Oil wells

BOUNDARIES

- National or state
- County
- Township, U. S.
- Section line, corner
- Reservation
- Land grant

DRAINAGE

Streams
- Perennial
- Intermittent, unclass.

Canals and ditches (CANAL / DITCH)

Lakes and ponds
- Perennial
- Intermittent

Wells (flowing)

Springs

Marsh

Wet spot

RELIEF

Escarpments
- Bedrock
- Other

Prominent peaks

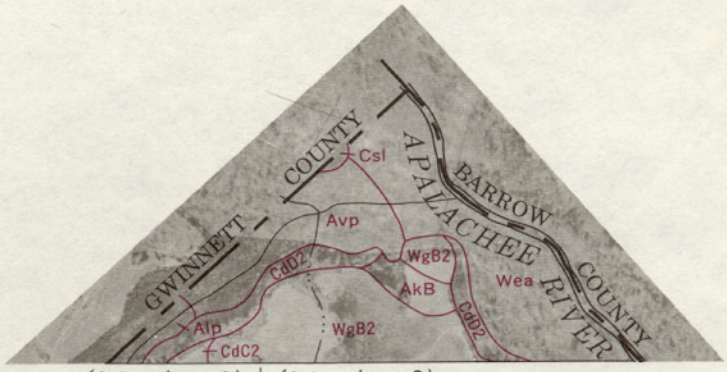
Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stones
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gullies

Soil map constructed 1963 by Cartographic Division, Soil Conservation Service, USDA, from 1960 aerial photographs. Controlled mosaic based on Georgia plane coordinate system, west zone, transverse Mercator projection. 1927 North American datum.



(Joins sheet 1) | (Joins sheet 2)

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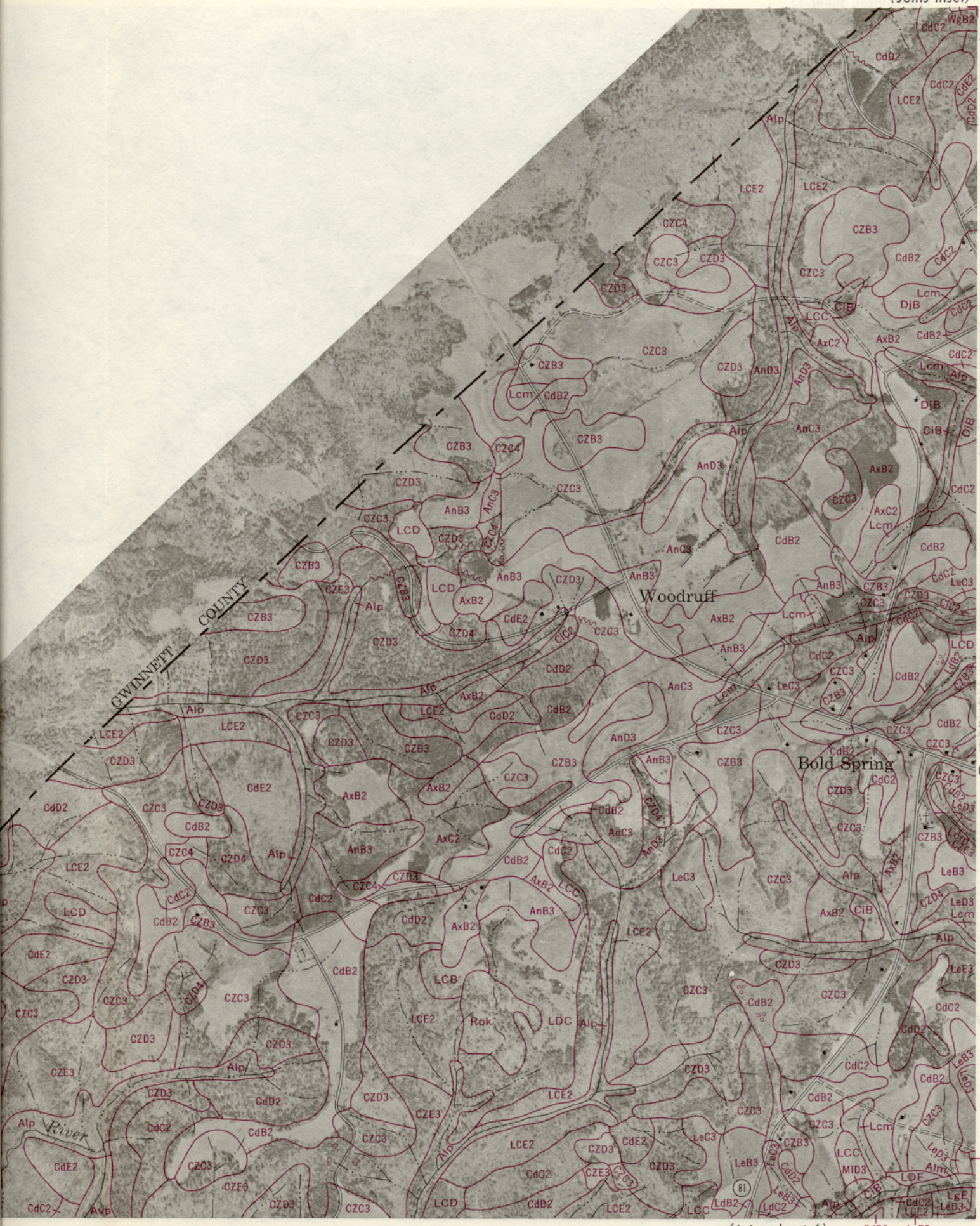

(Joins inset)
1
N
COUNTY
GWINNETT
Woodruff
Bold Spring
81
River
(Joins sheet 2)
(Joins sheet 6)
0
5000 Feet

(Joins inset, sheet 1)

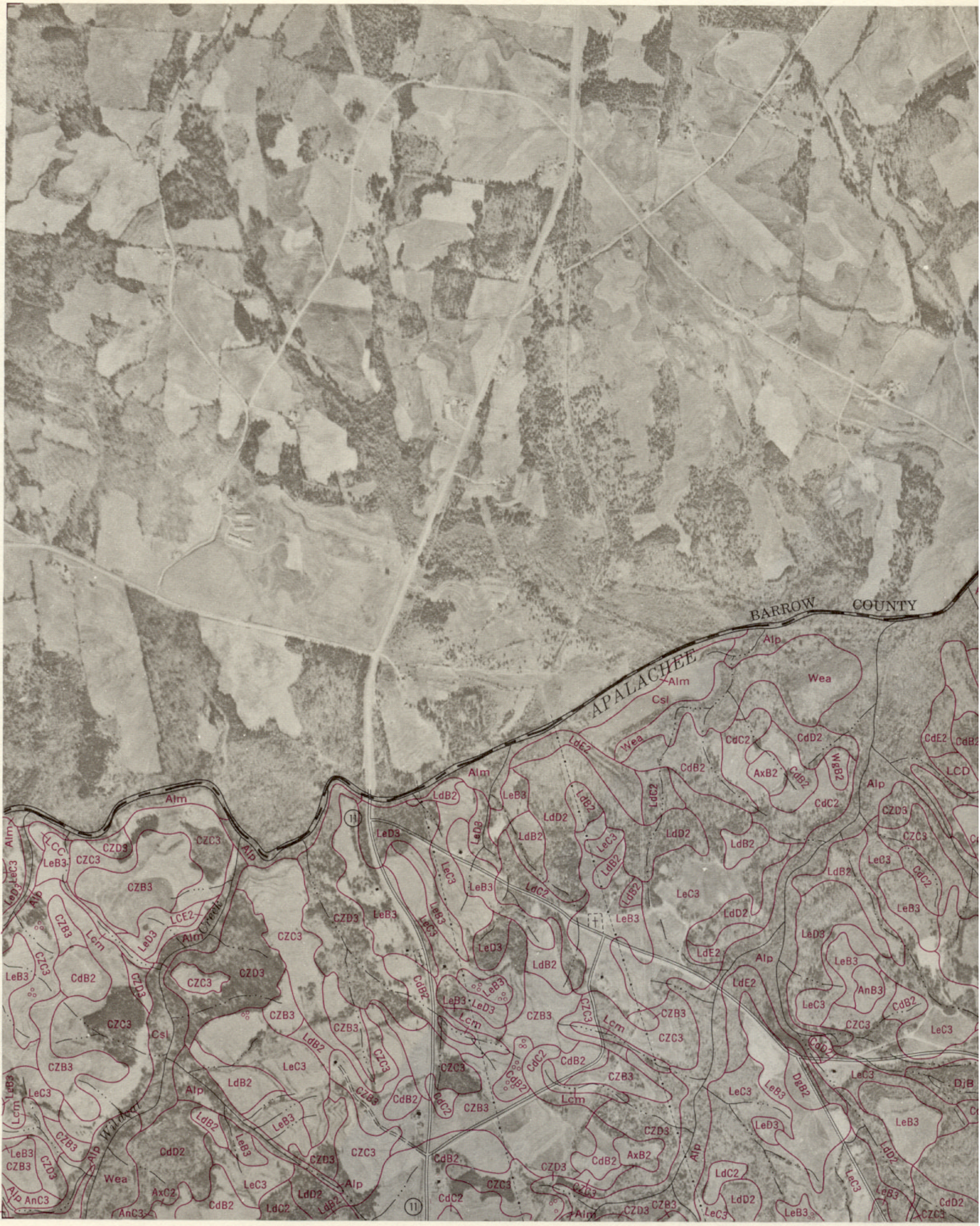
(Joins sheet 1)

(Joins sheet 7)

0 ½ 1 Mile


BARROW COUNTY
RIVER
RIVER
Alp
Alm
WgB2
LeC3
LeB3
LeD3
LeE3
LdB2
LdE2
LDE
LCC
LCD
LCB
MID3
MIC3
CdB2
CdC2
CdD2
CdE2
LdC2
CZC3
CZB3
CZD3
CZE3
LCE2
LCE3
Lcm
DpB3
DpC3
AnC3
Csl
LiF
(Joins sheet 3)
1 Mile
0
5000 Feet

(Joins sheet 2)



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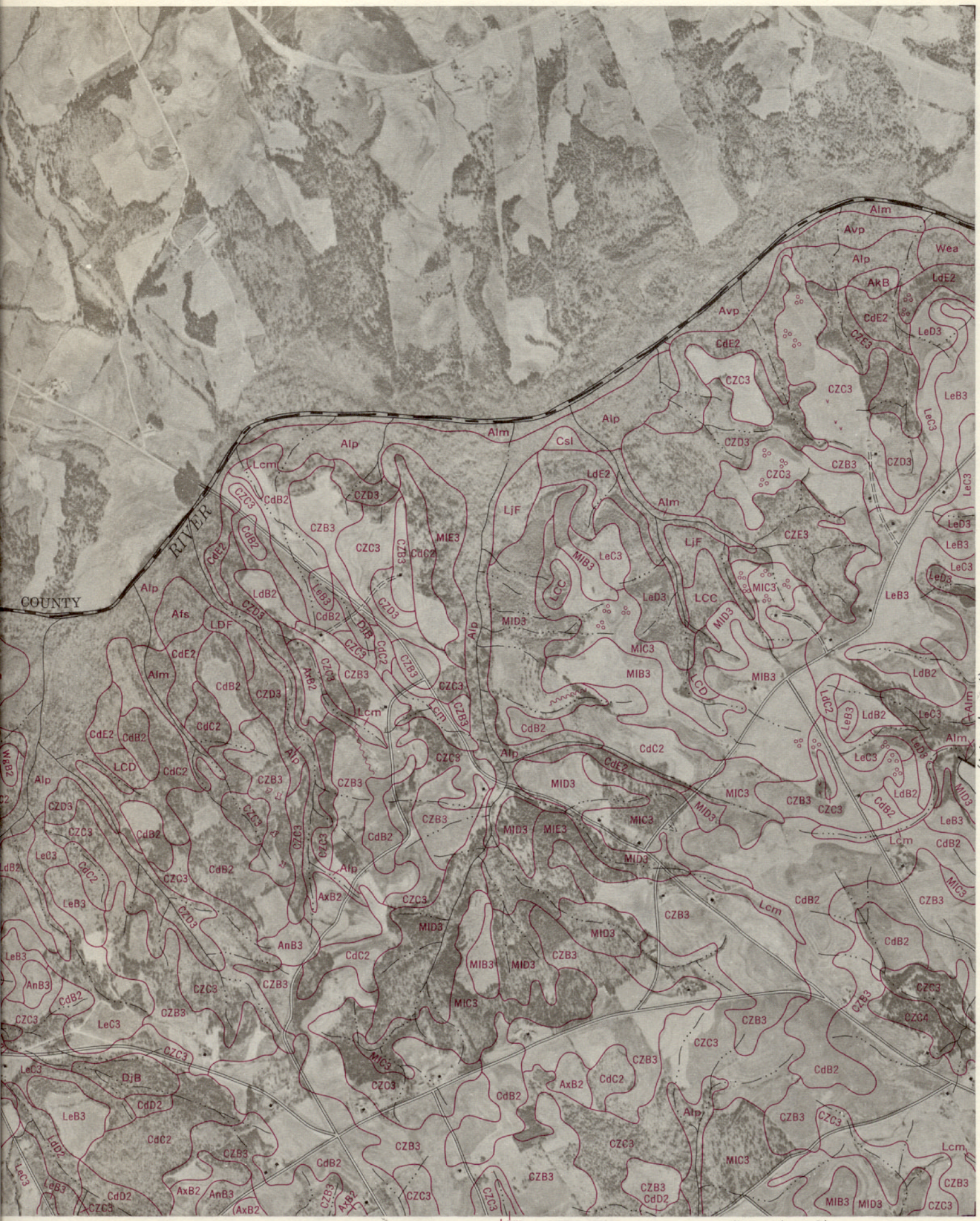
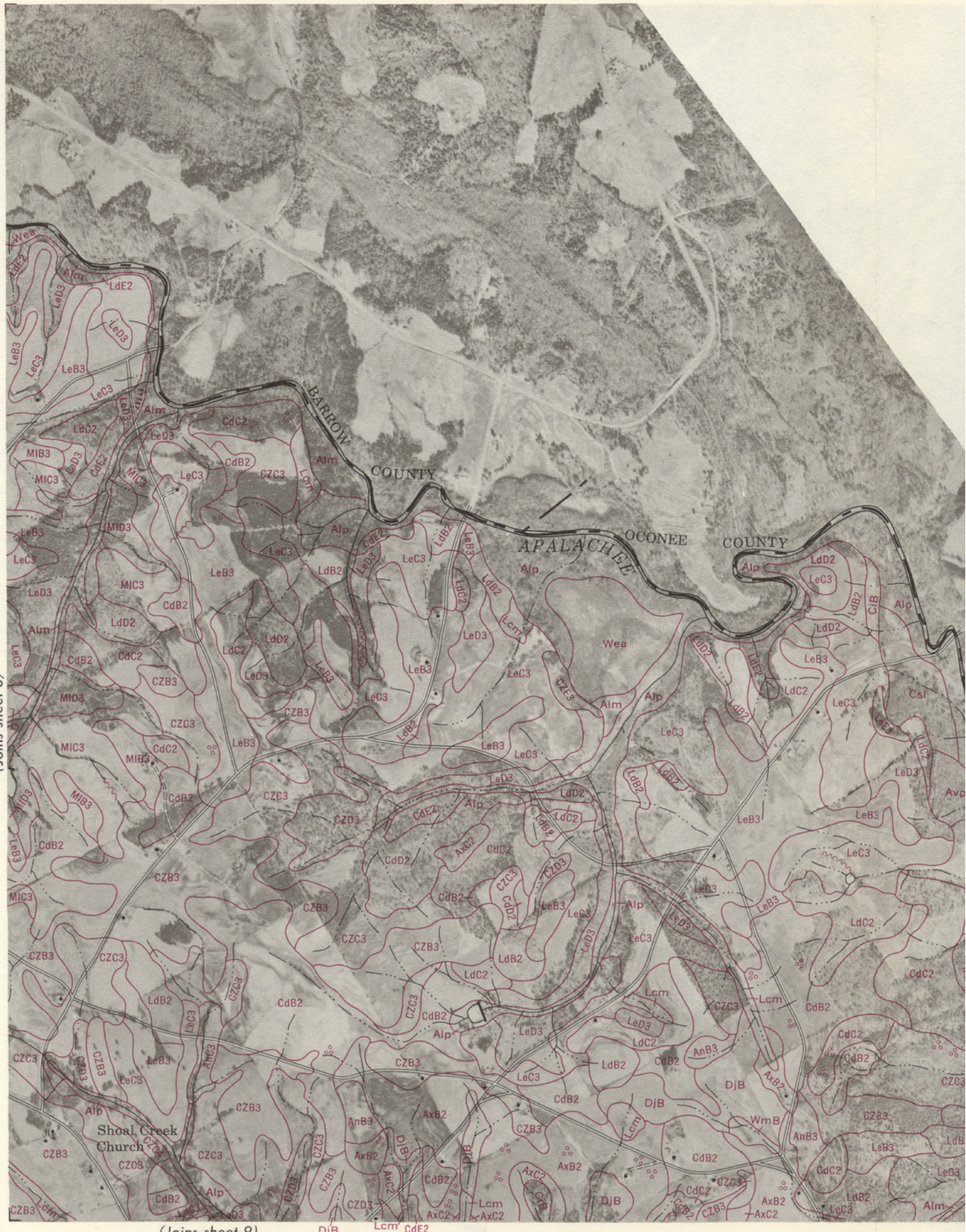
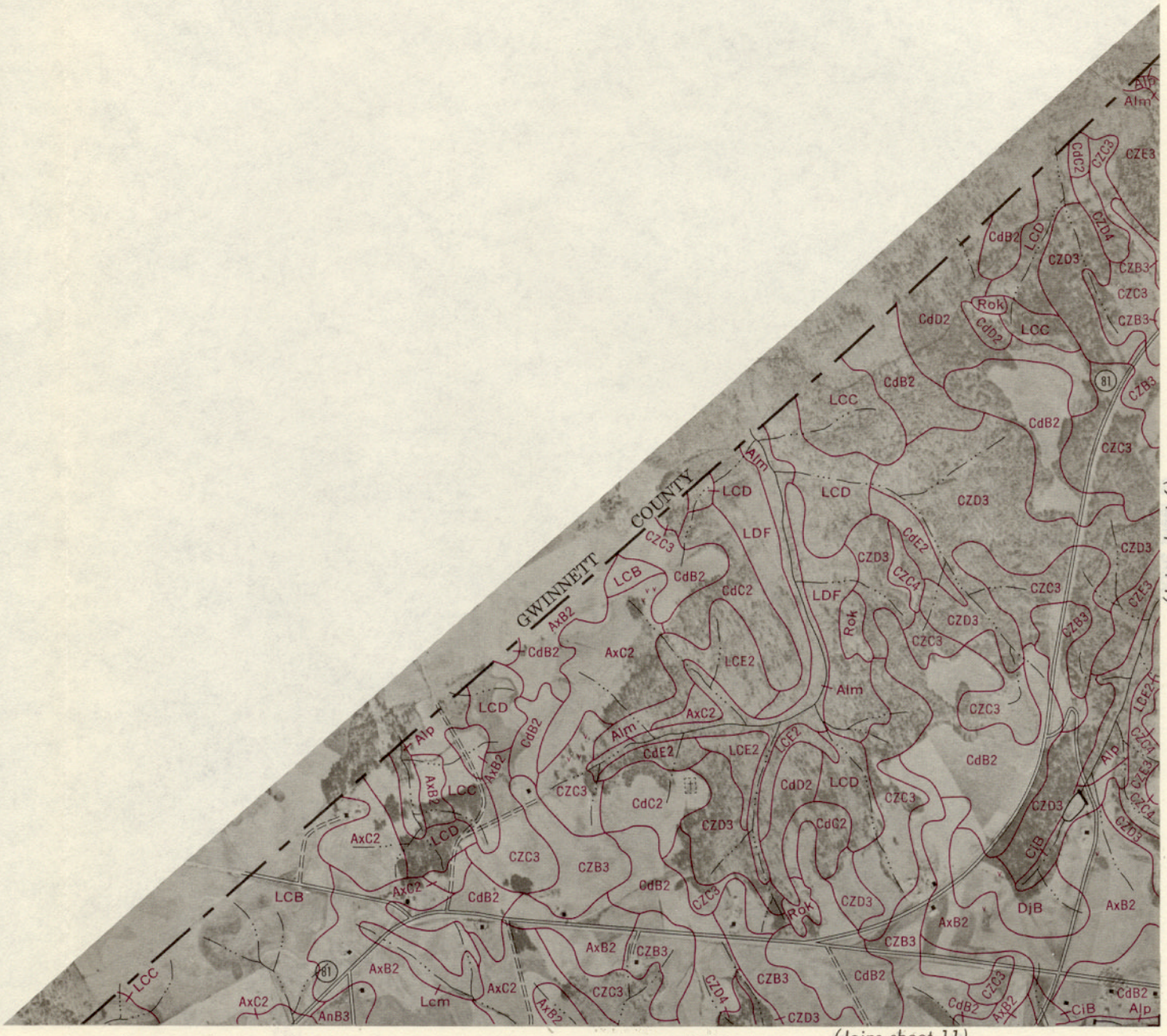

N
RIVER
COUNTY
Alm
Avp
Wea
Alp
AkB
LdE2
CdE2
LeD3
CZE3
CZC3
LeB3
LeC3
CZD3
Csl
LjF
CZB3
LCC
MIB3
MIC3
MID3
LCD
LdB2
LdC2
Afs
LDF
DjB
AxB2
CdC2
MIE3
Lcm
AnB3
CdD2
WaB2
CZC4
(Joins sheet 4)
(Joins sheet 8)
0
5000 Feet


N
BARROW COUNTY
OCONEE COUNTY
APALACHEE
Shoal Creek Church
(Joins sheet 3)
(Joins sheet 9)
0
½
1 Mile

1 Mile

0

5000 Feet


N
GWINNETT COUNTY
Alm
Alp
LCD
LDF
LCB
LCC
LCE2
CdB2
CdC2
CdD2
CdE2
AxB2
AxC2
CZC3
CZD3
CZB3
CZE3
CZC4
CZD4
Rok
DjB
CjB
AjB
AjP
AnB3
Lcm
81
0
5000 Feet
(Joins sheet 6)
(Joins sheet 11)

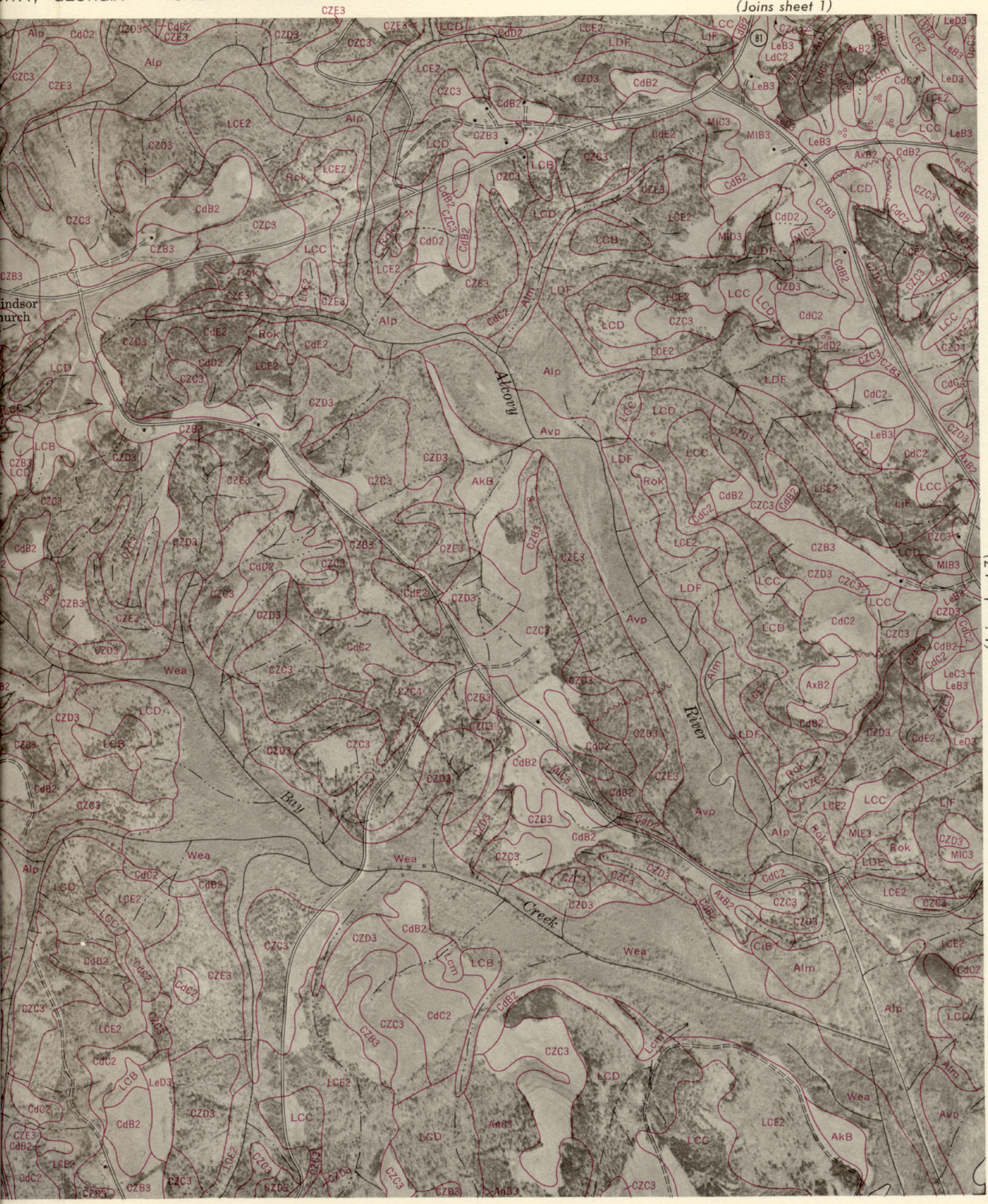
N

(Joins sheet 5)

(Joins sheet 12)

0 ½ 1 Mile

(Joins sheet 1)



(Joins sheet 7)

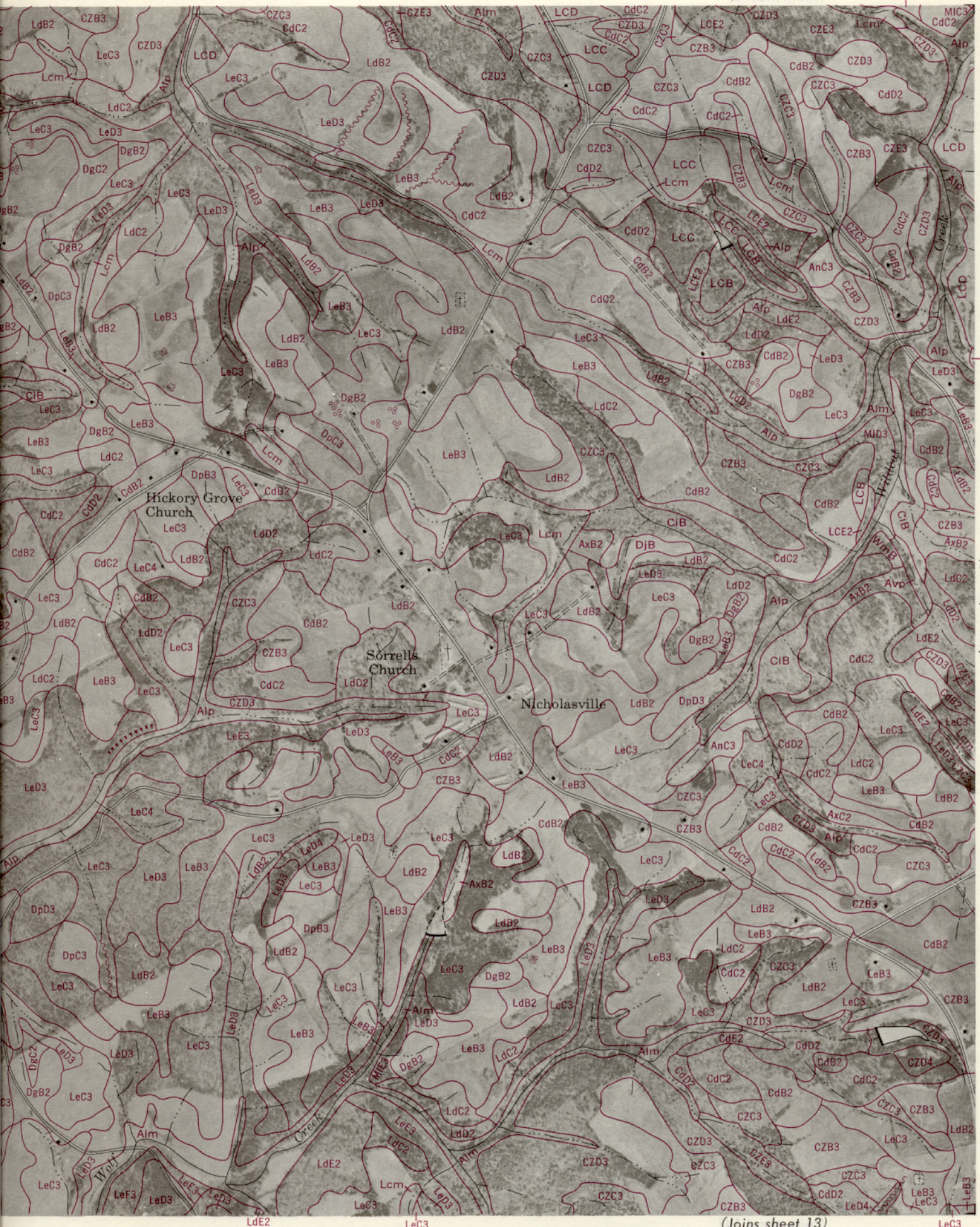
1 Mile

0

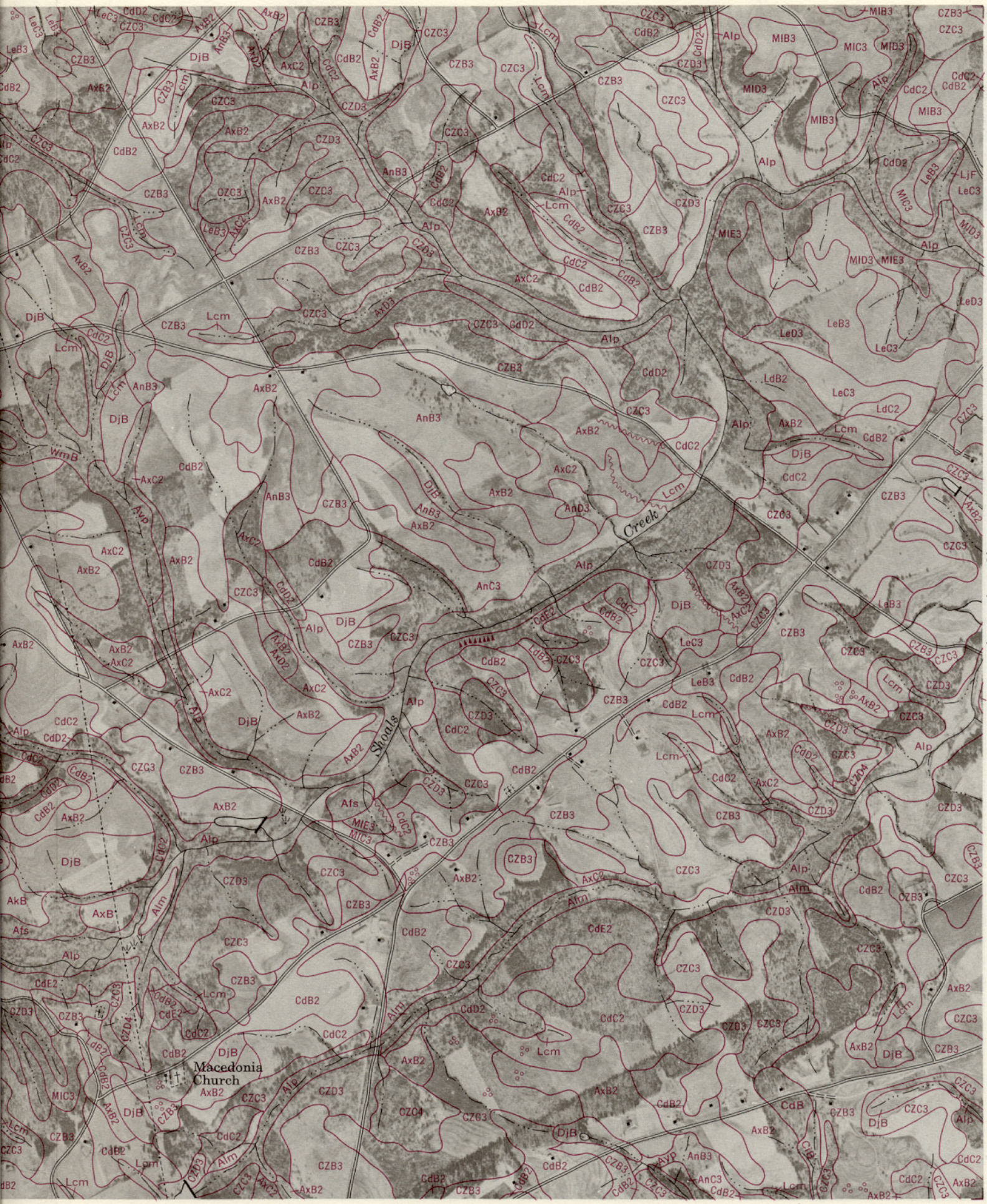
5000 Feet


Alm
CZD3
CZC3
(Joins sheet 6)
Beaver
Creek
Wolf
0
½
1 Mile

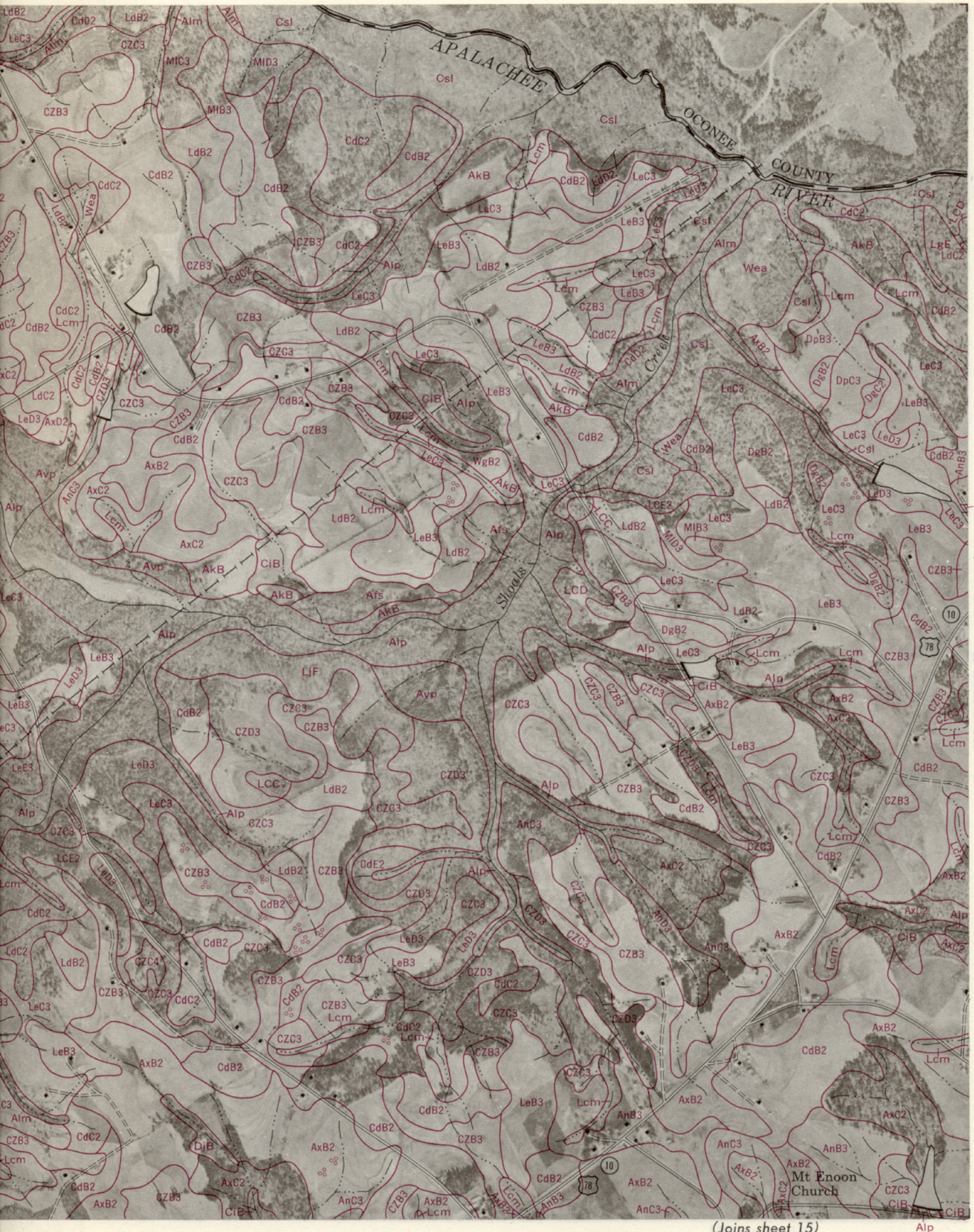
(Joins sheet 2)




(Joins sheet 3)
N
(Joins sheet 7)
(Joins sheet 14)
Campton
Sprint Hill Church
Wildcat
0
½
1 Mile

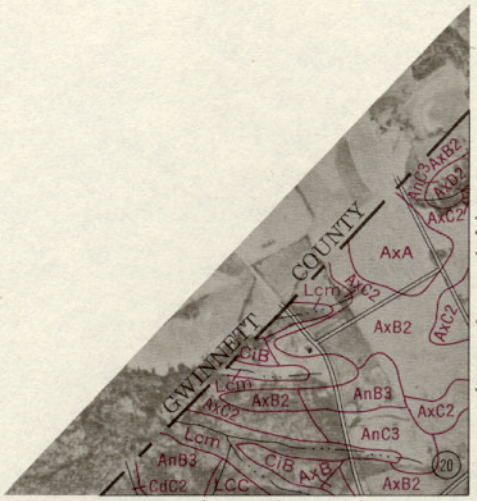

Macedonia Church
Creek
Shoals
(Joins sheet 9)
1 Mile
0
5000 Feet


(Joins sheet 4)
(Joins sheet 8)
Pleasant Grove Church
Center Hill Church
Gratis
Shoals
Creek
Creek
Shoals
0
½
1 Mile


9
N
APALACHEE
OCONEE
COUNTY
RIVER
Shoals
Creek
Mt Enoon
Church
(Joins sheet 10)
(Joins sheet 15)
0
5000 Feet


N
OCONEE COUNTY
Caruthers Mill
APALACHEE RIVER
OCONEE COUNTY
(Joins sheet 9)
(Joins sheet 16)
0
½
1 Mile


COUNTY
CdC2
CdB2
CdC2
Alm
eC3
1 Mile
0
5000 Feet



(Joins sheet 17)

(Joins lower left)

(Joins inset)

Loganville

GWINNETT COUNTY

Little Hayrick Creek

Little Hayrick Creek

0 ½ 1 Mile

(Joins sheet 5)

(Joins sheet 12)

(Joins sheet 18)

(Joins sheet 6)

(Joins sheet 11)

(Joins sheet 19)

0 ½ 1 Mile

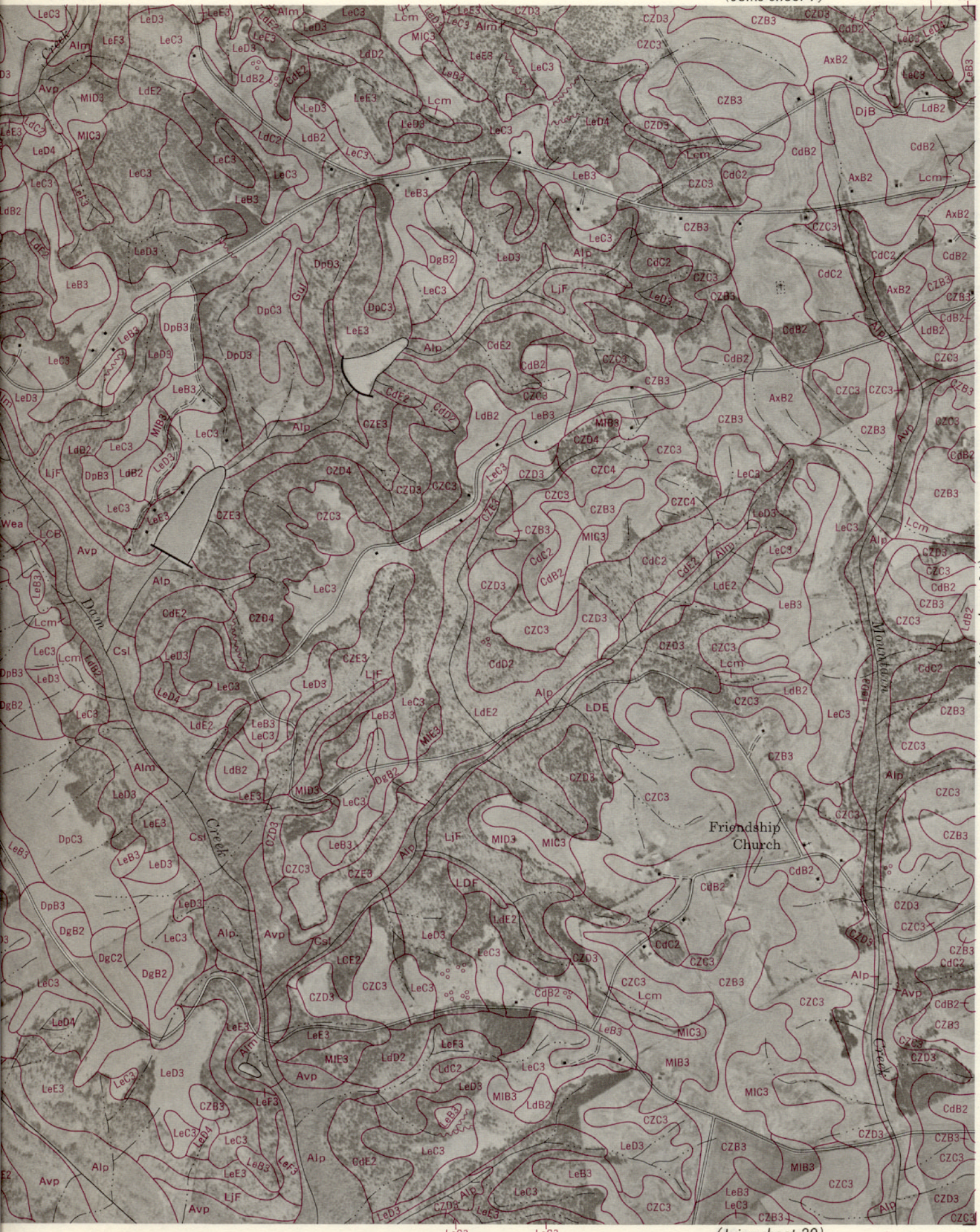
Mile 0 5000 Feet


Double Springs Church
Alcovy
Wolf Creek
Beaver Dam
Pepper
(Joins sheet 12)
0
½
1 Mile

(Joins sheet 7)

13

N



(Joins sheet 14)

(Joins sheet 20)

0 5000 Feet


(Joins sheet 8)
N
Mountain Creek Church
Walker Park
WEST LAWN MEMORIAL CEMETERY
A and M School
(Joins sheet 13)
(Joins sheet 21)
0
½
1 Mile

(Joins sheet 15)

Mile 0 5000 Feet

(Joins sheet 14)


(Joins sheet 9)
15
N
Vernon
Turkey Creek
Jacks Creek
LDE
Mountain
(Joins sheet 16)
0
5000 Feet
(Joins sheet 22)

16

(Joins sheet 10)

N

(Joins sheet 15)

(Joins sheet 23)

0 ½ 1 Mile

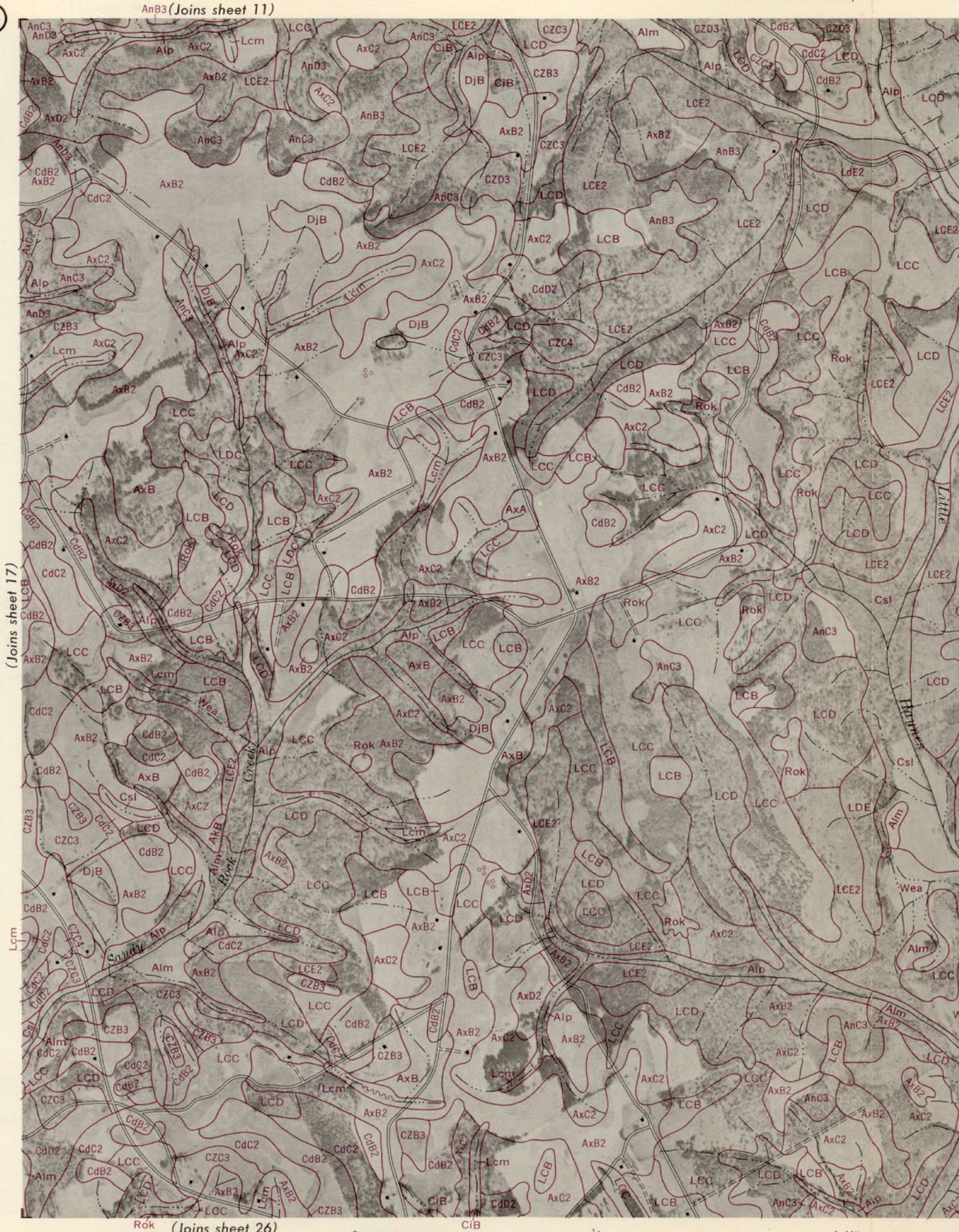
(Joins inset, sheet 24)

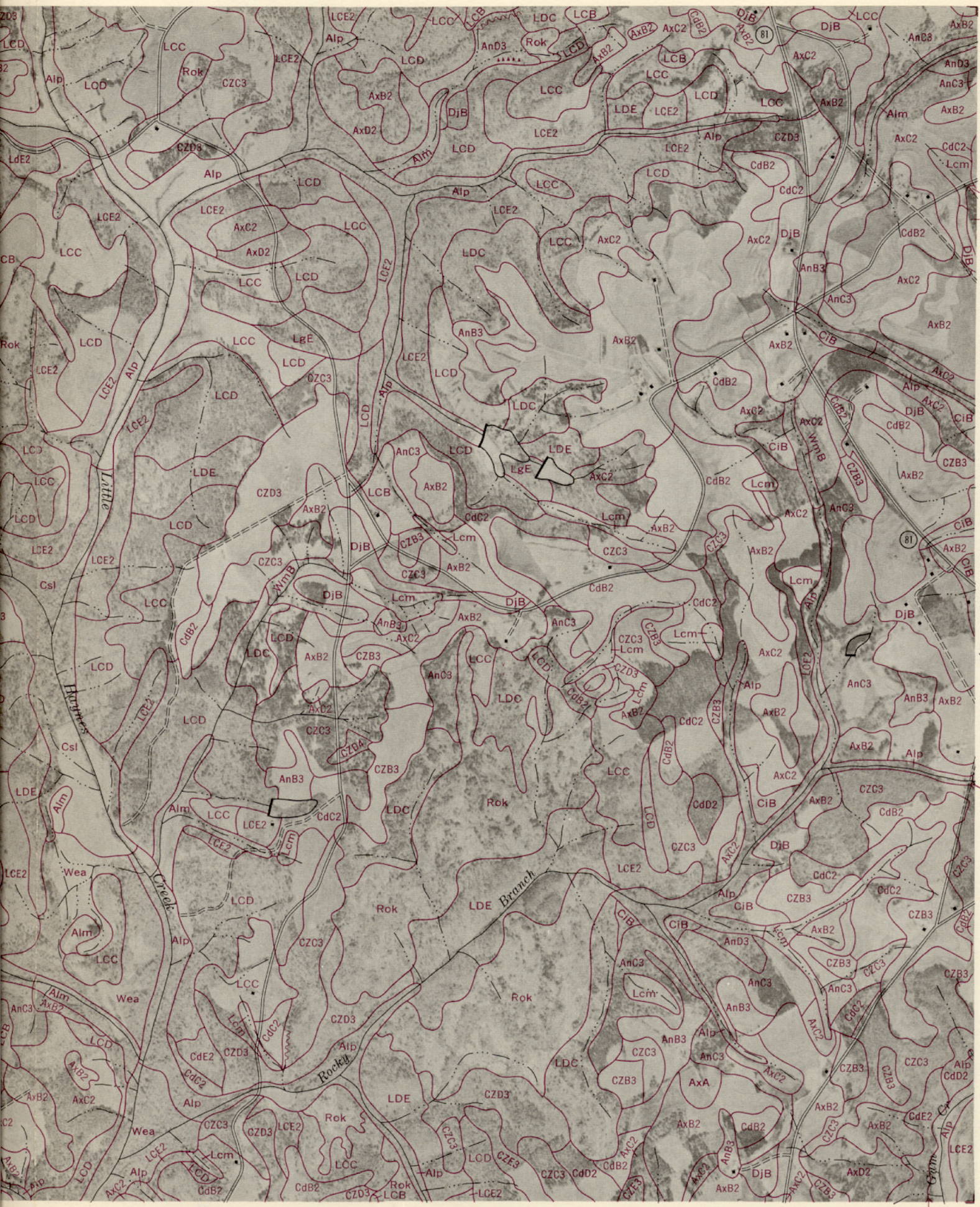

ROCKDALE COUNTY
Big Haynes Cr.
20
LCB
AxB2
AlD
AxC2
RoK
DjB
LCC
LCD
Lcm
AxB
CjB
AxD2
LCE2
AlM
CdB2
AnC3
0
½
1 Mile

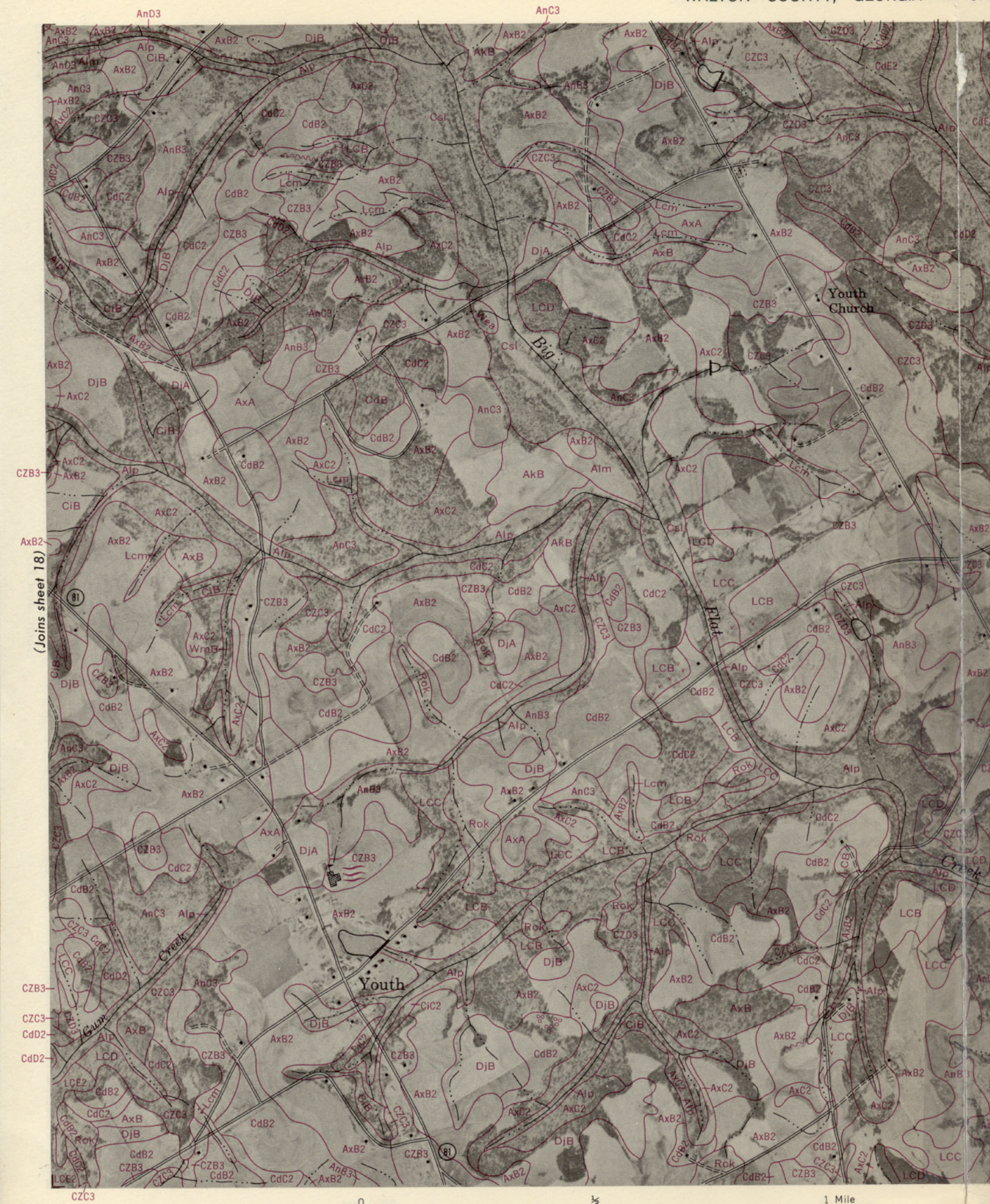
(Joins inset, sheet 11)

(Joins sheet 18)

(Joins sheet 25)


AnB3 (Joins sheet 11)
N
(Joins sheet 17)
Rok (Joins sheet 26)
CiB
0
½
1 Mile

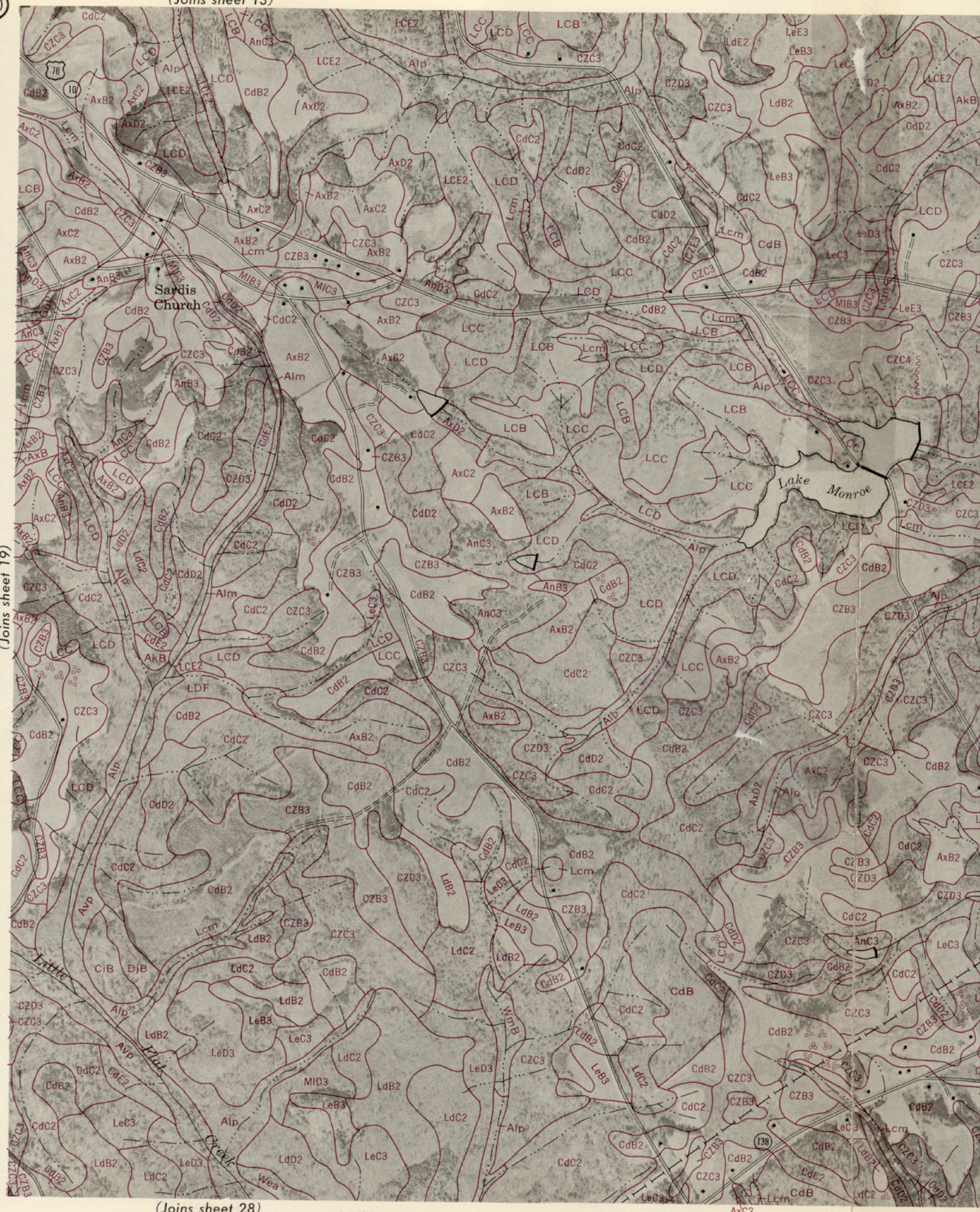

Little Hunters Creek
Rocky Branch
Lcm
(Joins sheet 19)
1 Mile
0
5000 Feet


Youth Church
Big
Flat
Creek
Youth
Gum
Creek
(Joins sheet 18)
0
½
1 Mile

(Joins sheet 12)

(Joins sheet 20)

(Joins sheet 27)


(Joins sheet 13)
N
(Joins sheet 19)
Sardis Church
Lake Monroe
Little Alcovy Creek
(Joins sheet 28)
0
½
1 Mile

(Joins sheet 21)

1 Mile

0

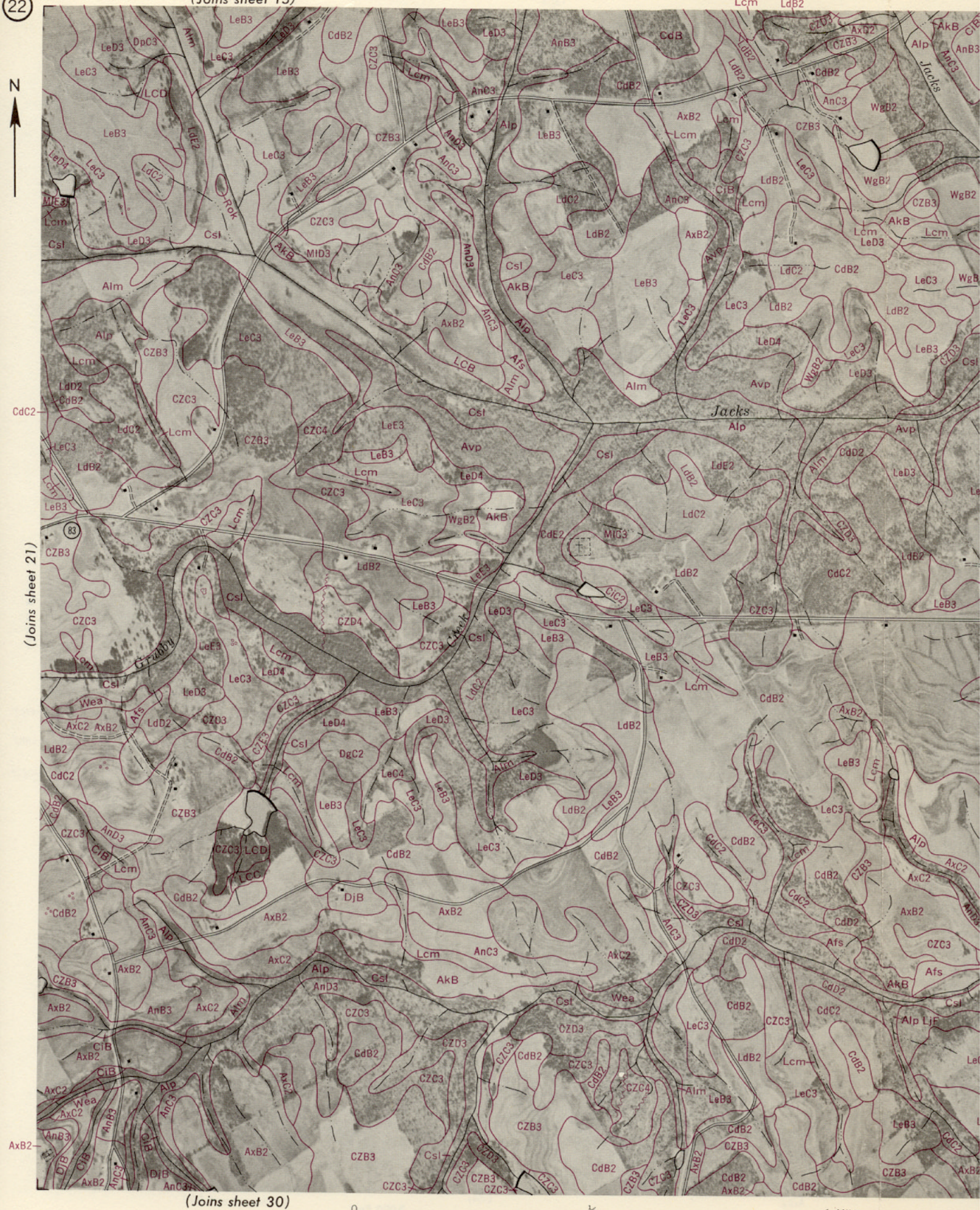
5 000 Feet

(Joins sheet 20)

(Joins sheet 14)

(Joins sheet 22)

(Joins sheet 29)


(Joins sheet 15)
N
(Joins sheet 21)
(Joins sheet 30)
Jacks
Jacks
Grubby
Creek
0
½
1 Mile


Wea
Creek
Creek
Good Hope
(Joins sheet 23)
Mile
0
5000 Feet

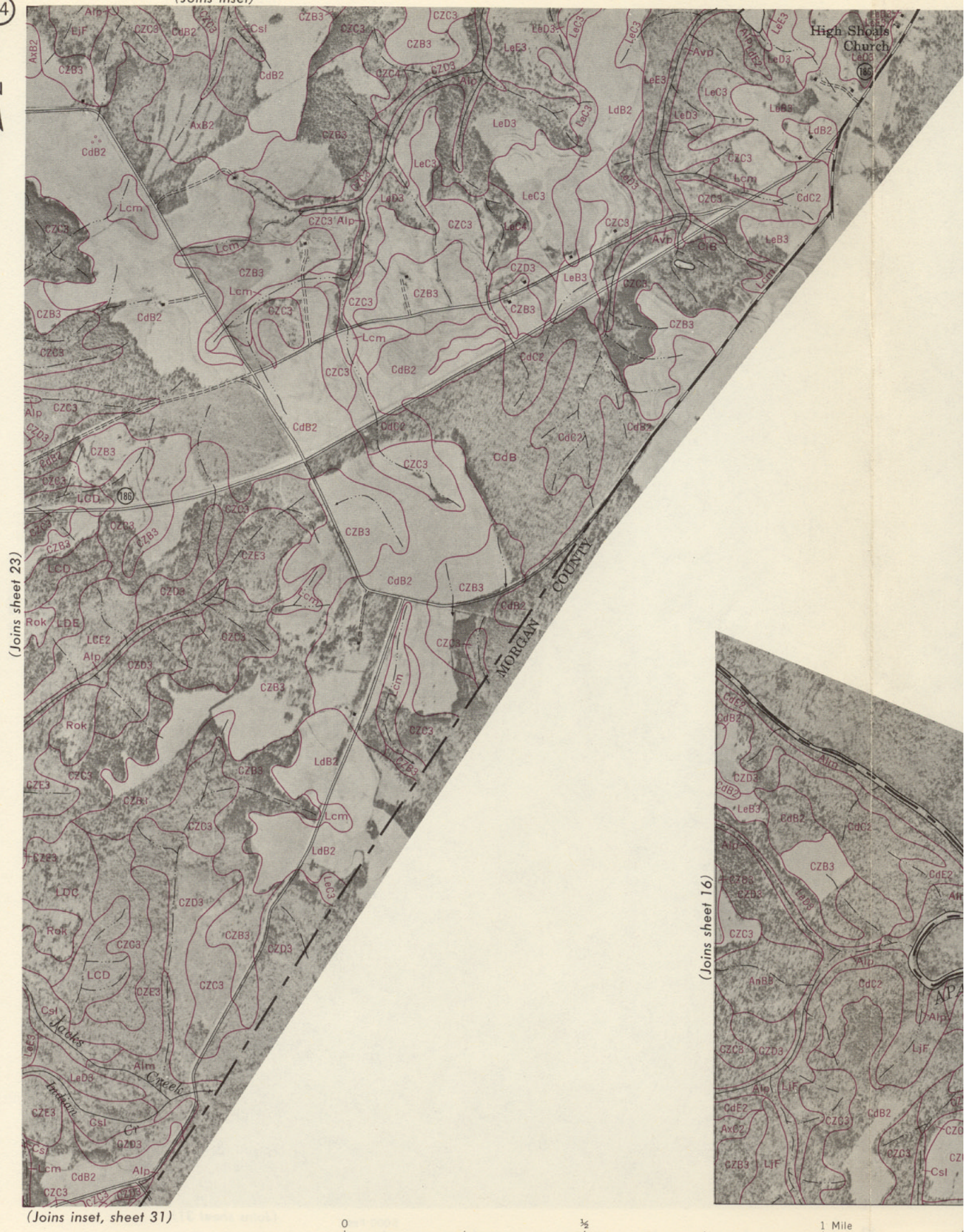

Bethel Church
Jacks Creek Church
Jacks Creek Church
Jacks Creek
Indian
(Joins sheet 22)
0
½
1 Mile

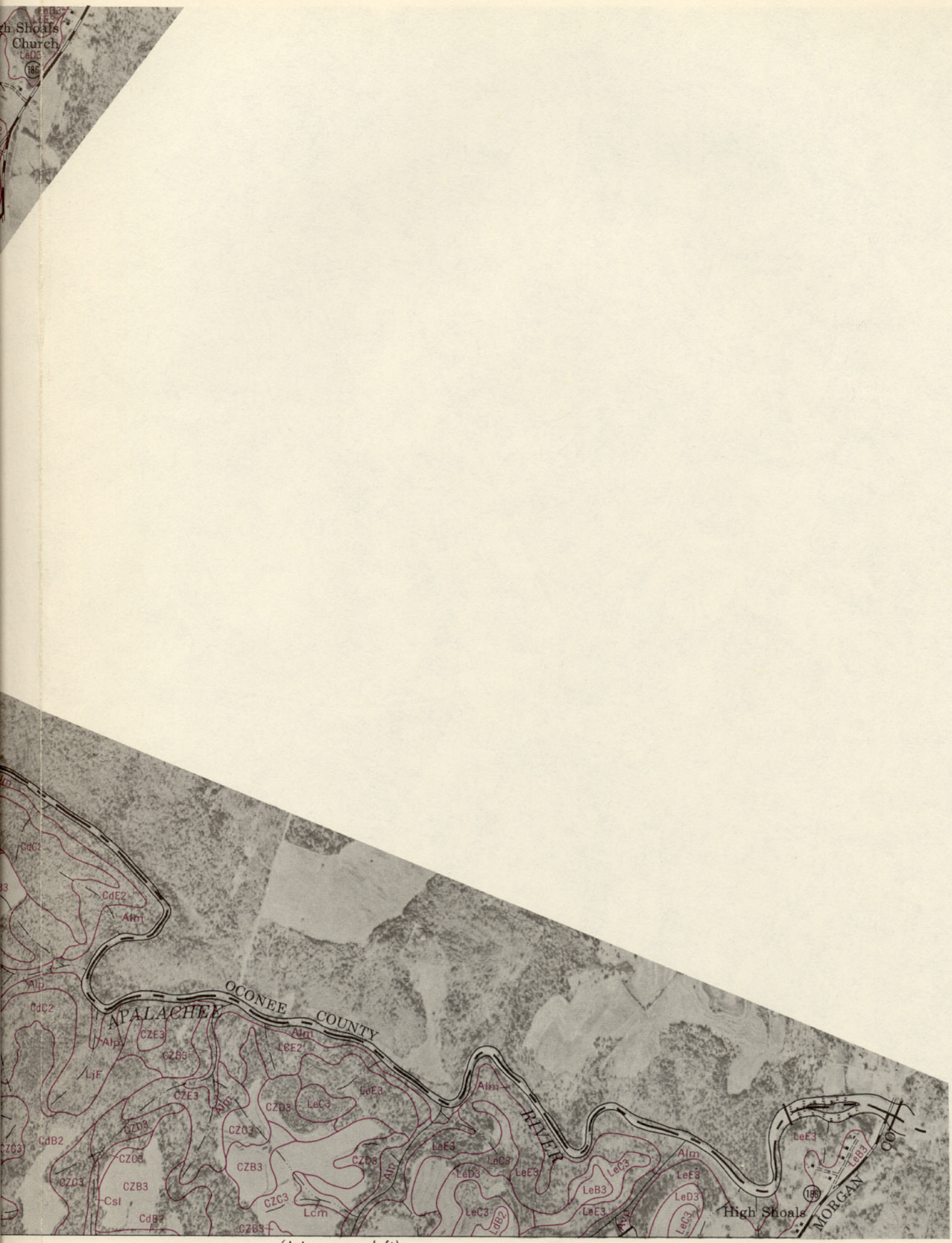
(Joins sheet 16)

(Joins sheet 24)

(Joins sheet 31)

0 5000 Feet


(Joins inset)
N
High Shoals Church
MORGAN COUNTY
(Joins sheet 23)
(Joins sheet 16)
(Joins inset, sheet 31)
Jacks Creek
Indian Cr
0
½
1 Mile



(Joins upper left)

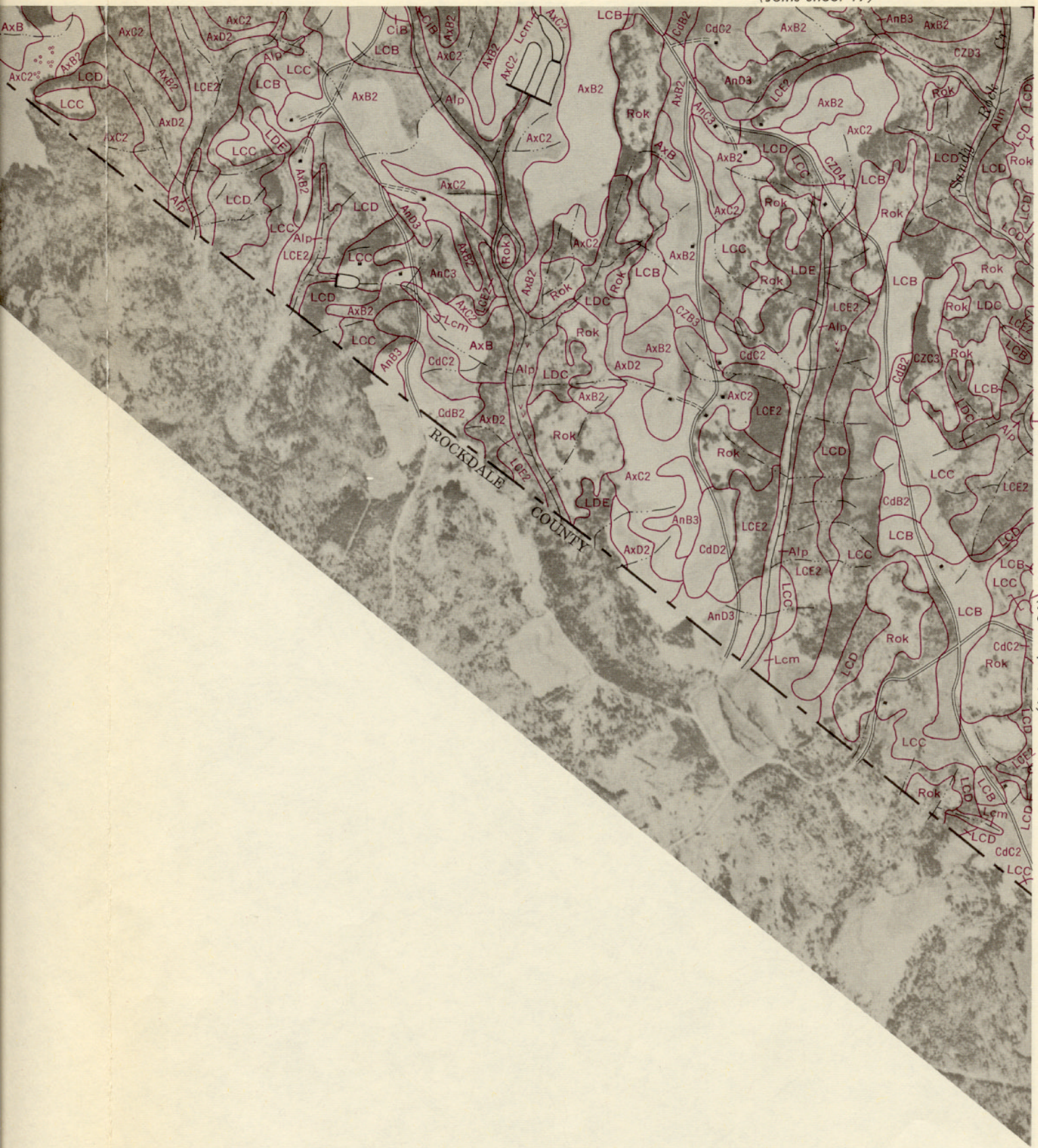
Mile

0

5000 Feet

0 ½ 1 Mile

(Joins sheet 17)



(Joins sheet 26)


(Joins sheet 18)
(Joins sheet 25)
N
Sharon Church
Haynes Creek
Sandy Rock Creek
Little
ROCKDALE COUNTY
0
½
1 Mile


Gum Creek Church
Creek
(Joins sheet 27)
(Joins sheet 32)
0
5000 Feet


Corinth Church
Walnut Grove
81
138
Rok
(Joins sheet 26)
0
½
1 Mile

(Joins sheet 19)

27

N

(Joins sheet 28)

0 5000 Feet

(Joins sheet 33)


(Joins sheet 20)
(Joins sheet 27)
(Joins sheet 34)
N
Big Flat Creek
Little Flat Creek
Mt Zion Church
Wea
LCD
138
0
½
1 Mile

1 Mile

0

5000 Feet

(Joins sheet 28)

(Joins sheet 21)

(Joins sheet 30)

(Joins sheet 35)


30
(Joins sheet 22)
(Joins sheet 29)
(Joins sheet 36)
N
Harmony Church
Big Sandy Creek
Hard Labor Cr.
0
½
1 Mile

(Joins sheet 31)


Good Hope
Peters School
Sandy
Little
Rock
Creek
(Joins sheet 30)
(Joins sheet 37)
0
½
1 Mile

(Joins sheet 23)

(Joins inset)

N

MORGAN AND WALTON COUNTIES FOREST UNIT

Braswell Holiness Church

MORGAN COUNTY

(Joins sheet 24)

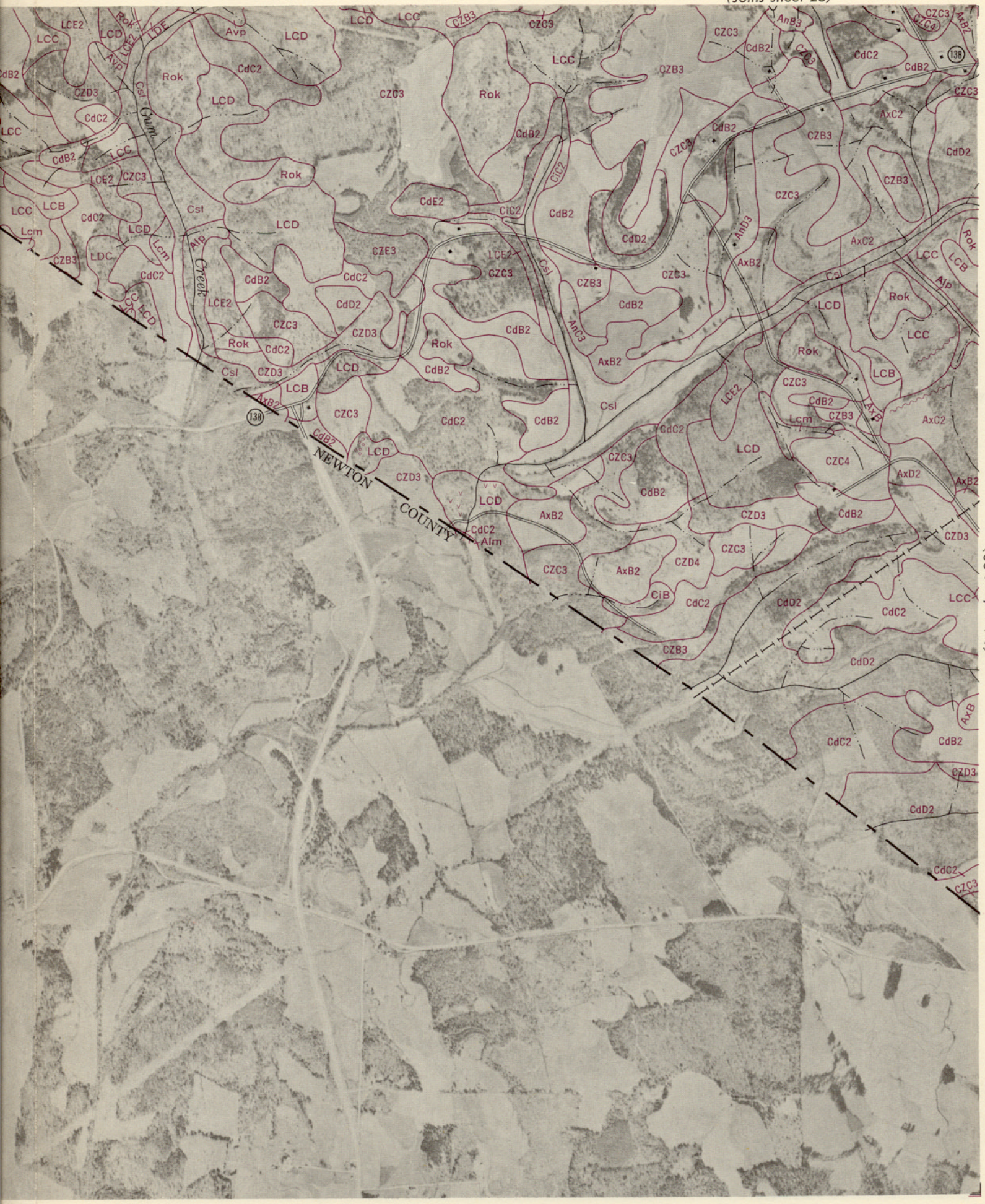
(Joins upper right)

MORGAN COUNTY

0 5000 Feet


N
AlpA
AlrnA
CsI
LdD2
LgE
LCE2
RoK
LCC
LCE2
LCD
LeB3
LdC2
CdB2
LCD
CdB2
CZD3
LCD
LeC3
LCC
CdC2
CZC3
LCC
CdB2
CZD3
LCE2
LCC
LCB
CdC2
Lcm
CZB3
LDC
0
½
1 Mile

(Joins sheet 26)

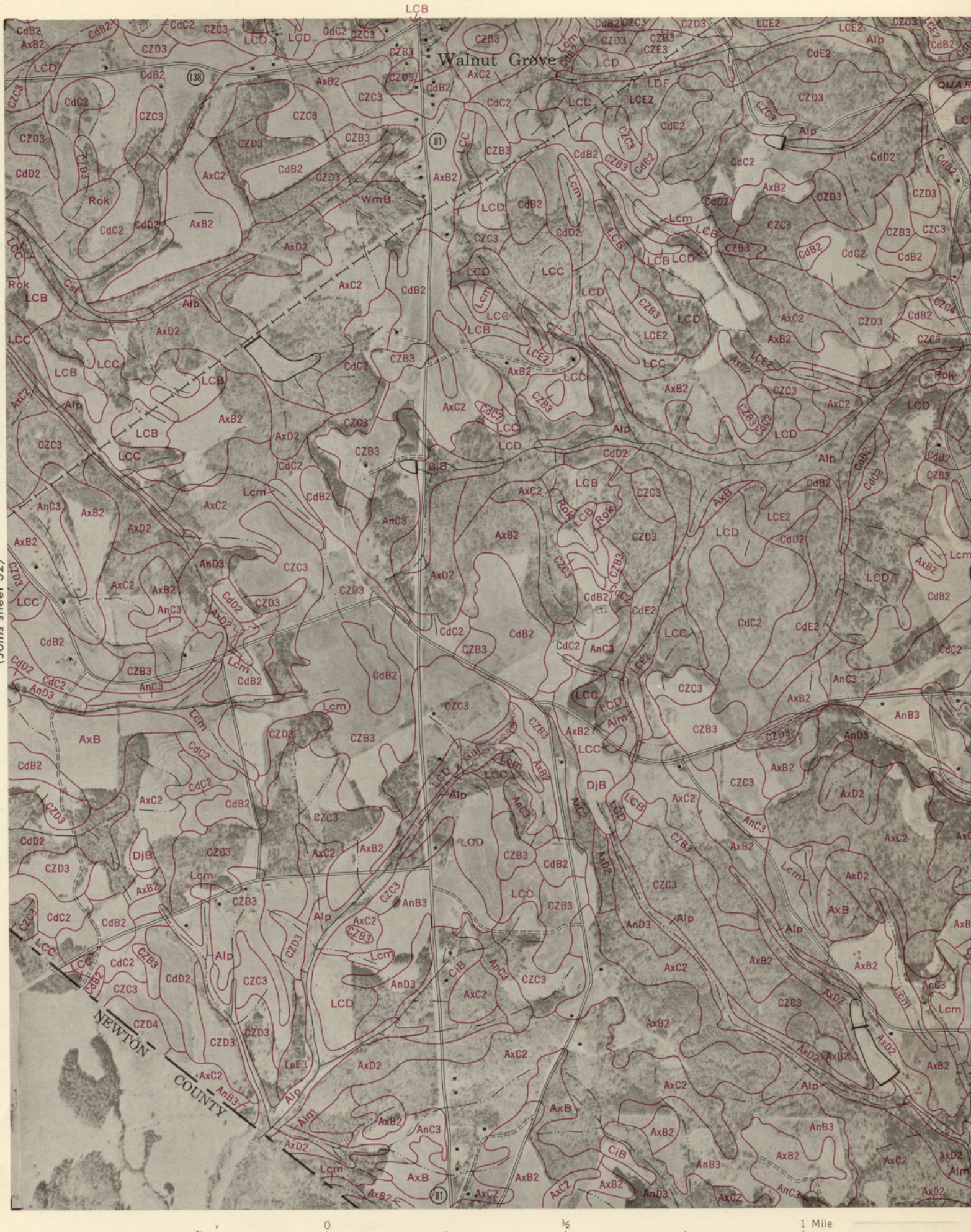


(Joins sheet 33)

Mile

0

5000 Feet


Walnut Grove
NEWTON
COUNTY
(Joins sheet 32)
0
½
1 Mile

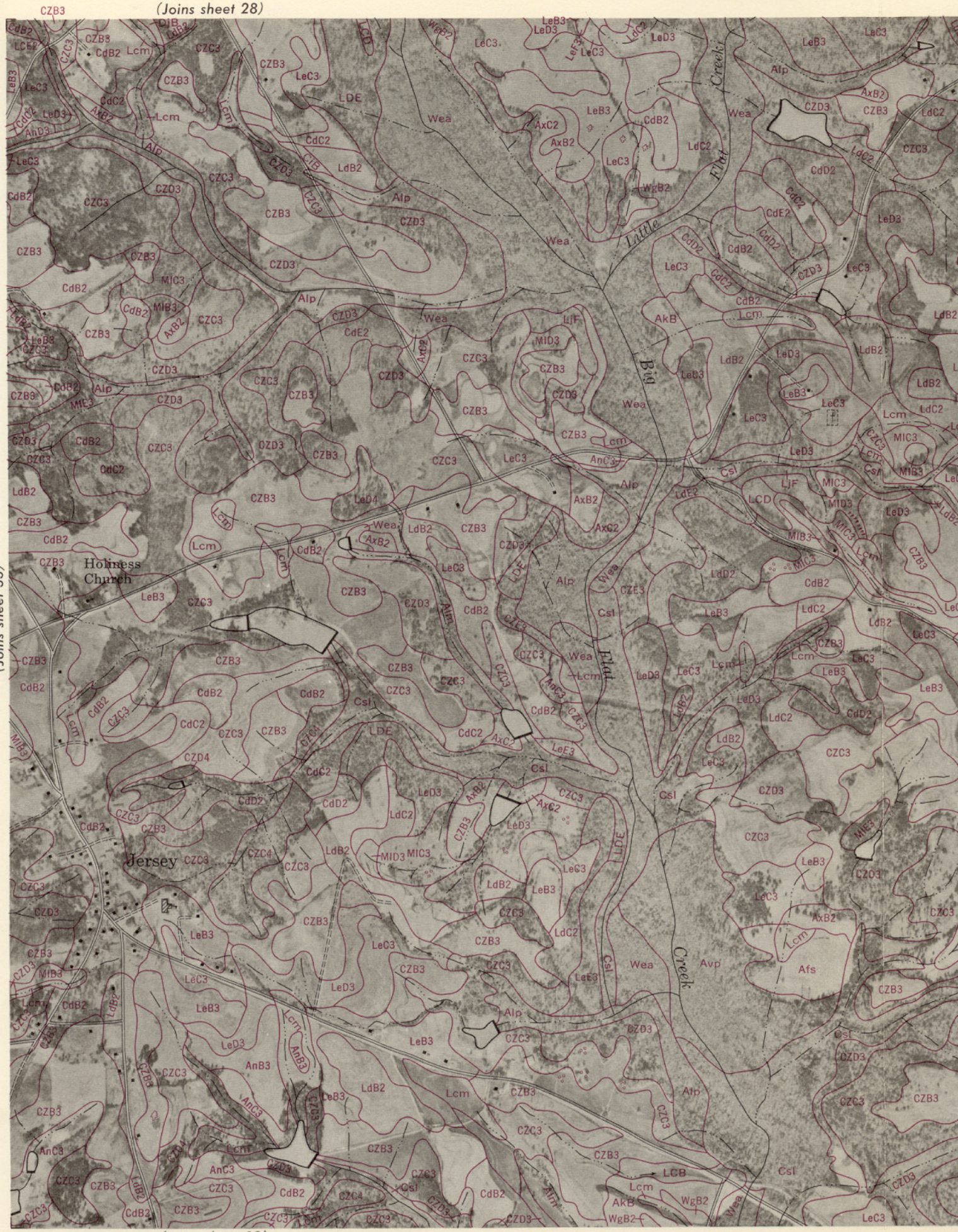
AxB2 (Joins sheet 27)

N

(Joins sheet 34)

0 5000 Feet

(Joins sheet 38)


N
(Joins sheet 28)
(Joins sheet 33)
(Joins sheet 39)
Holiness Church
Jersey
Little Creek
Big Flat Creek
0
½
1 Mile


Alcovy Mountain Church
Alcovy Mountain
Alcovy River
Creek
Mountain
(Joins sheet 35)
0
5000 Feet

(Joins sheet 34)

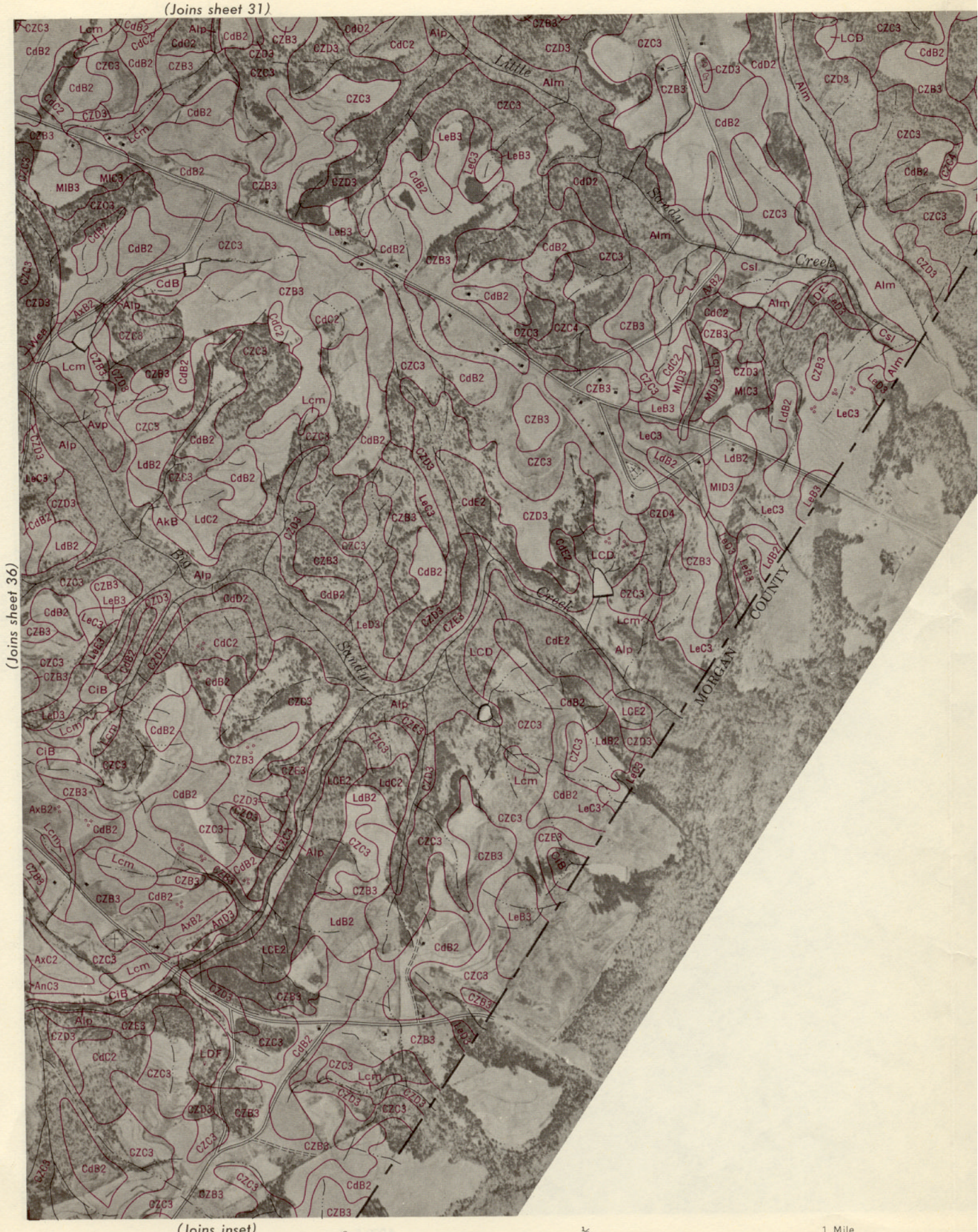
(Joins sheet 29)

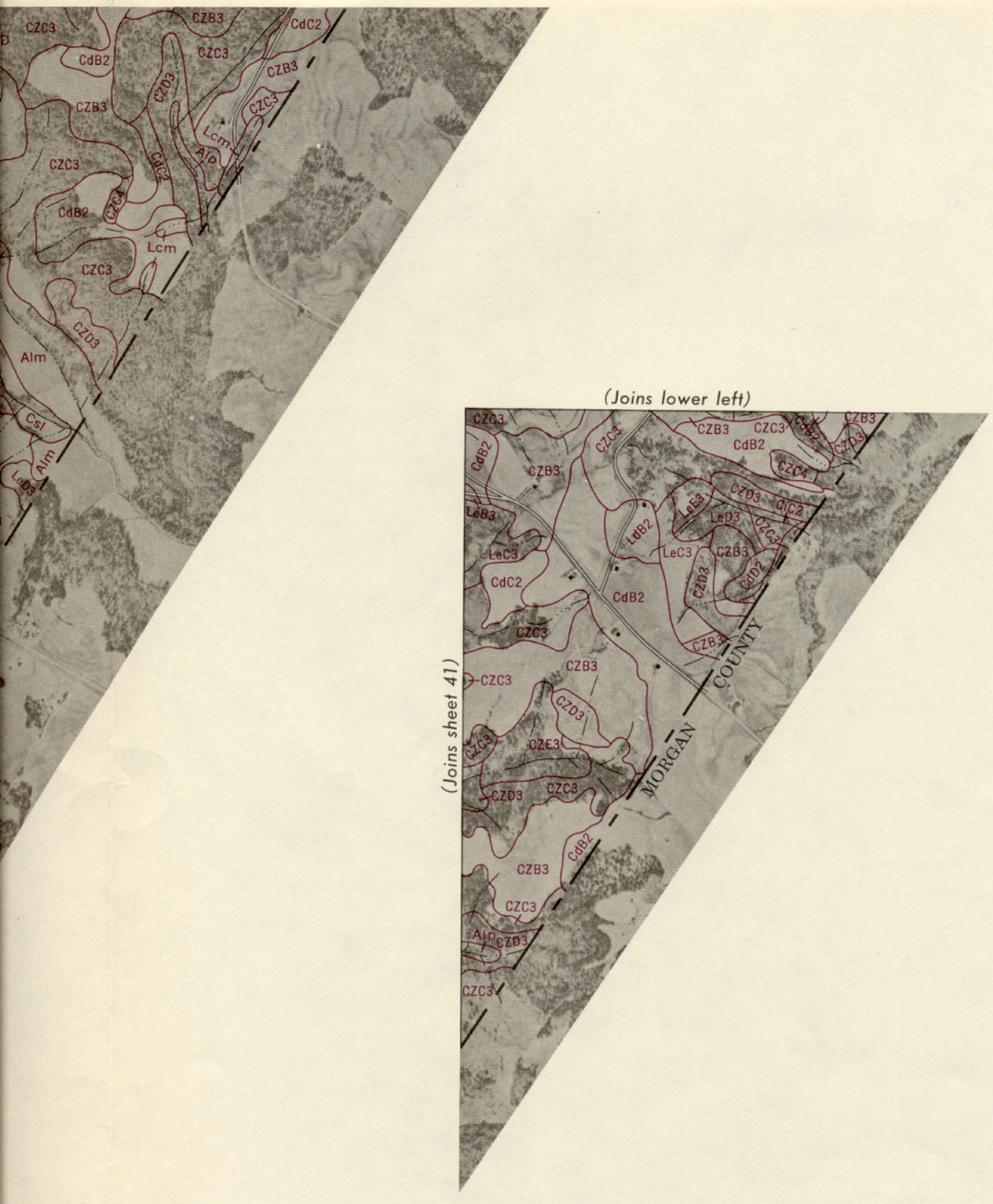
(Joins sheet 36)

(Joins sheet 40)


(Joins sheet 30)
N
(Joins sheet 35)
Union Chapel Church
Browns Hill Church
Harts Creek
Rocky Creek
Labor Creek
(Joins sheet 41)
0
½
1 Mile

(Joins sheet 37)


(Joins sheet 31)
(Joins sheet 36)
(Joins inset)
Little Alm Creek
Sandy Alm Creek
Big Sandy Creek
MORGAN COUNTY
0
½
1 Mile


CZC3
CZB3
CdC2
CdB2
CZC3
CZB3
CZD3
CZC3
CZB3
Lcm
Alp
CdC2
CZC3
CdB2
Lcm
CZC3
CZD3
Alm
Csl
Alm
LeD3
(Joins lower left)
CZC3
CZB3
CZC3
CZB3
CdB2
CdB2
CZC3
CZB3
CZD3
LeE3
LeD3
CdC2
LeB3
LdB2
LeC3
CZB3
LeC3
CZD3
CdD2
CdC2
CdB2
CZC3
CZB3
CZB3
CZC3
CZD3
CZC3
CZE3
CZD3
CZC3
CdB2
CZB3
CZC3
Alp
CZD3
CZC3
(Joins sheet 41)
MORGAN COUNTY

N

0 5000 Feet


N
AxC2
AxB2
AnC3
AnD3
AxC2
CdB2
AxB2
AnC3
CsI
LCm
AxC2
CZB3
LCC
DjB
AxB2
AxC2
LCD
AnB3
AlD
CZC3
CZB3
LCE2
CsI
CdC2
CdE2
LCm
AlM
CZB3
CZC3
CZC4
CZD3
CZE3
0
½
1 Mile

(Joins sheet 33)

(Joins sheet 39)

Mile

0

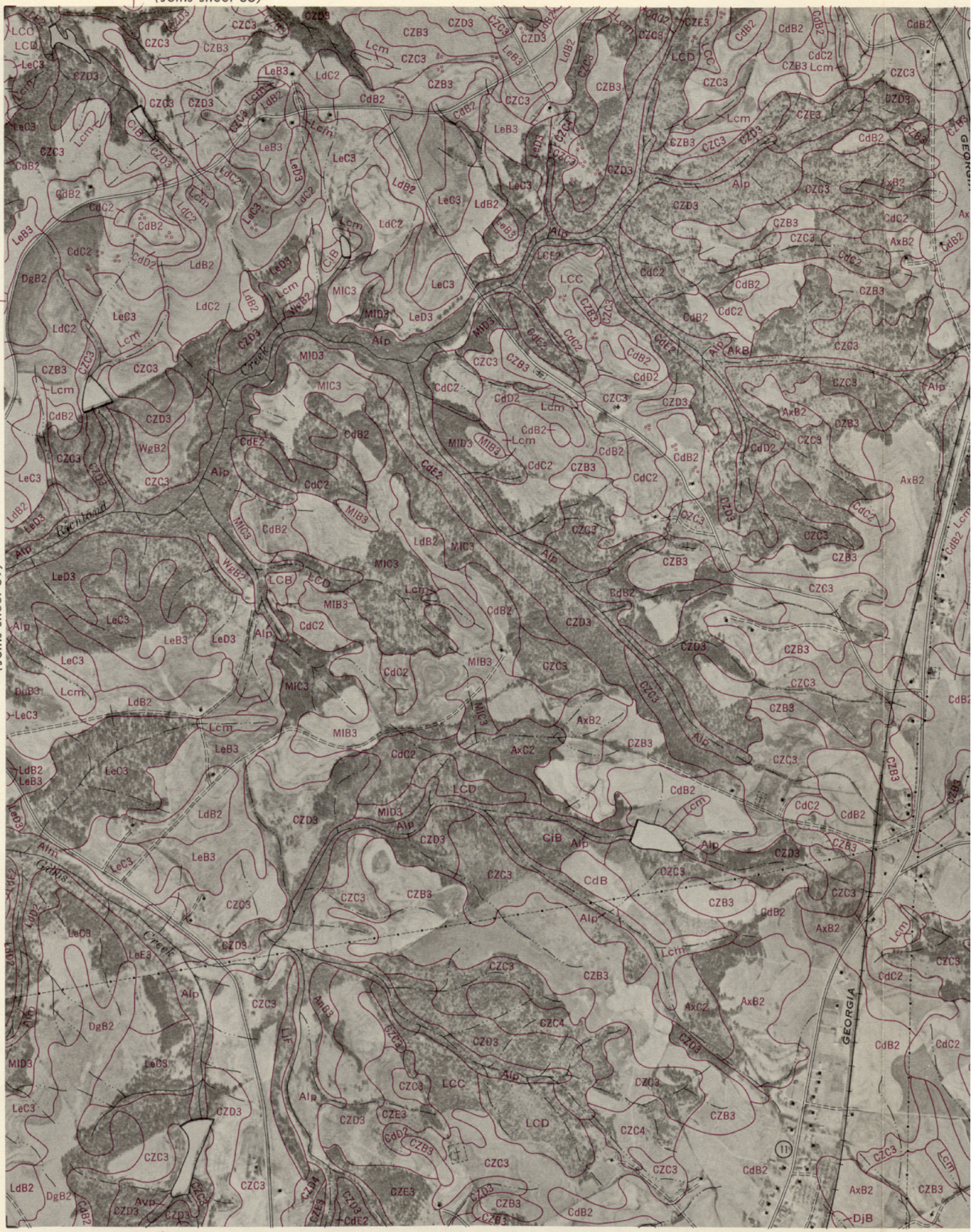
5 000 Feet


Pleasant Hill Church
Cornish Creek
Big Flat Creek
NEWTON COUNTY
(Joins sheet 38)
0
½
1 Mile

(Joins sheet 34)

(Joins sheet 40)

(Joins sheet 42)


CZC3 (Joins sheet 35)
N
CZB3
(Joins sheet 39)
(Joins sheet 43)
GEORGIA
0
½
1 Mile

(Joins sheet 41)

0 5000 Feet


Mt Paron Church
Ready
Means
Creek
Creek
HARD
(Joins sheet 40)
(Joins sheet 44)
0
½
1 Mile

(Joins sheet 36)

N

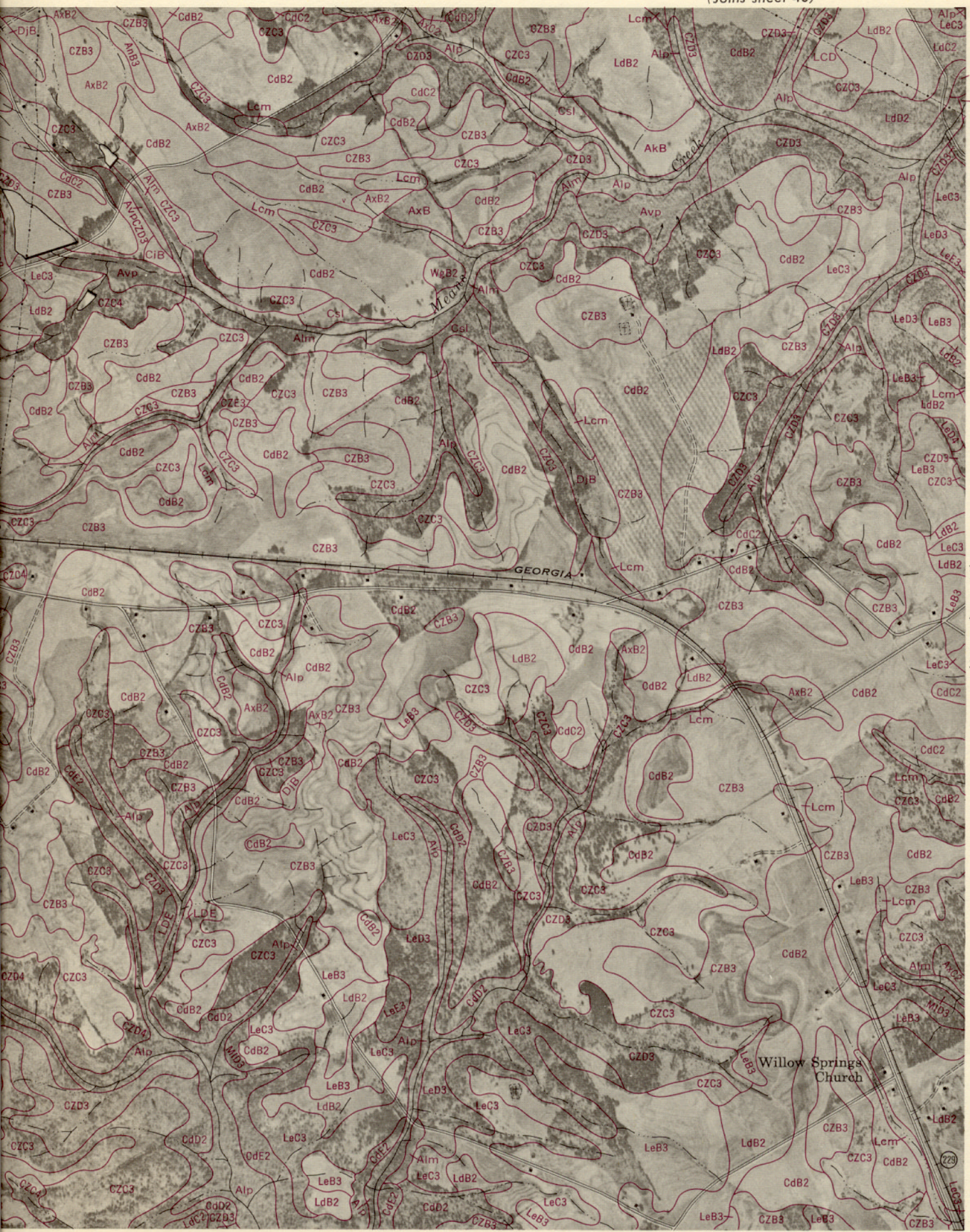
(Joins inset, sheet 37)


N
LCB
CdC2
LDC
AxB2
AxC2
AxC2
CZC3
CZC3
AnB3
LeB3
LeE3
Alp
Creek
CZB3
CZB3
MIC3
CZB3
LCC
AxB2
CZB3
LCE2
LCC
CZE3
AnC3
AxB2
LeD3
LeC3
Wea
Alm
MIB3
CZC4
AxC2
LeC3
CdB2
NEWTON
LeD3
Flat
CZB3
CZC3
AxB2
CZE3
AnC3
Alp
CZE3
CdC2
Alp
Big
Avp
ALCOVY
Alp
Alm
Csl
Alm
CZD3
CdB2
Alm
Alp
CdD2
CdC2
CZC3
LCE2
0
½
1 Mile


(Joins sheet 39)
(Joins sheet 43)
RIVER
NEWTON COUNTY
Mile
0
5000 Feet

(Joins sheet 42)

(Joins sheet 40)

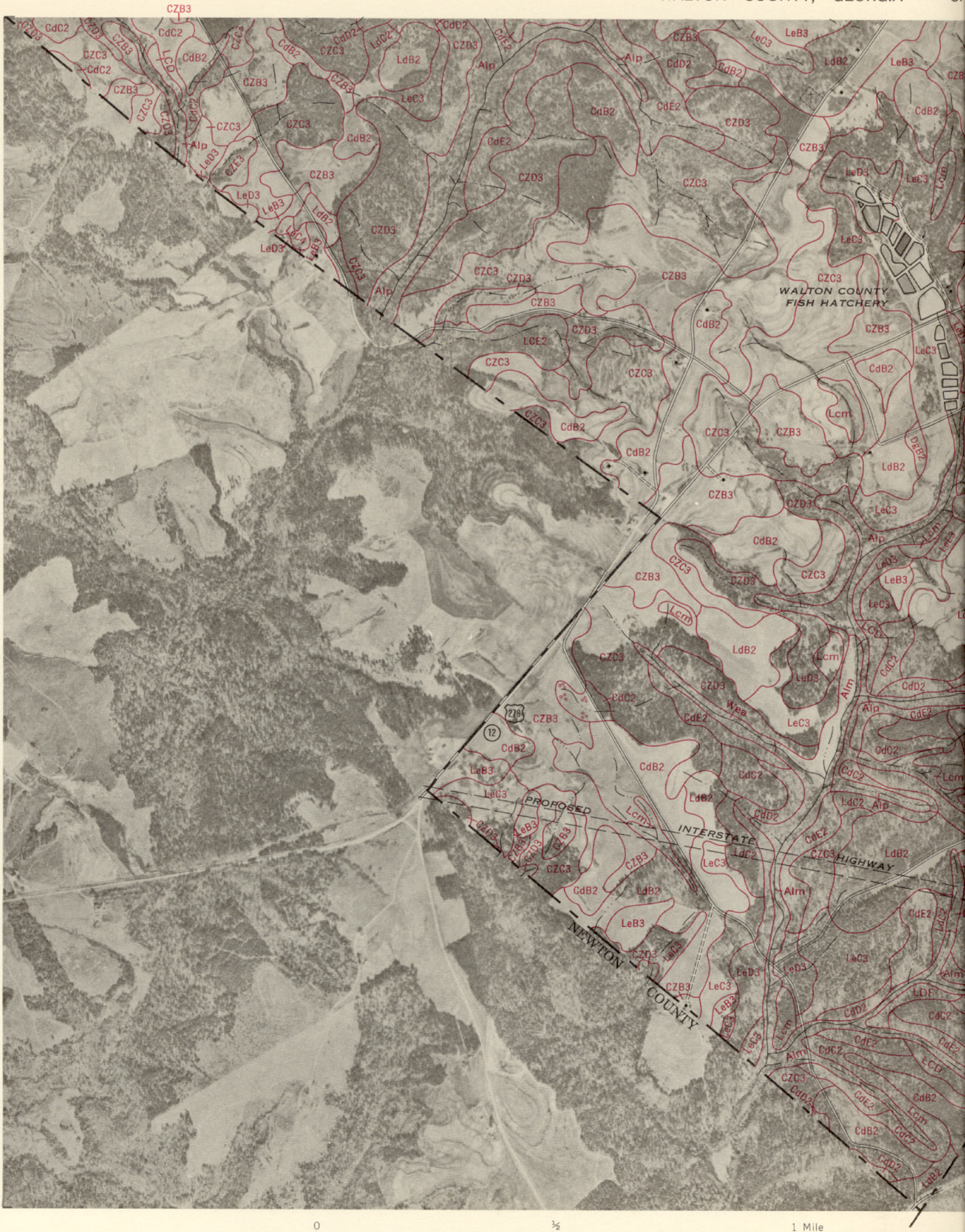


(Joins sheet 44)

(Joins sheet 45)


(Joins sheet 41)
(Joins sheet 43)
(Joins sheet 45)
N
Knoxs Chapel
MORGAN
Means Alm Creek
Rocky Creek
0
½
1 Mile

Mile 0 5000 Feet


WALTON COUNTY
FISH HATCHERY
PROPOSED
INTERSTATE
HIGHWAY
NEWTON
COUNTY
12
278
0
½
1 Mile

(Joins sheet 43) | (Joins sheet 44)